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Growth Rate Yardstick p. 42
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AUGUST 1960

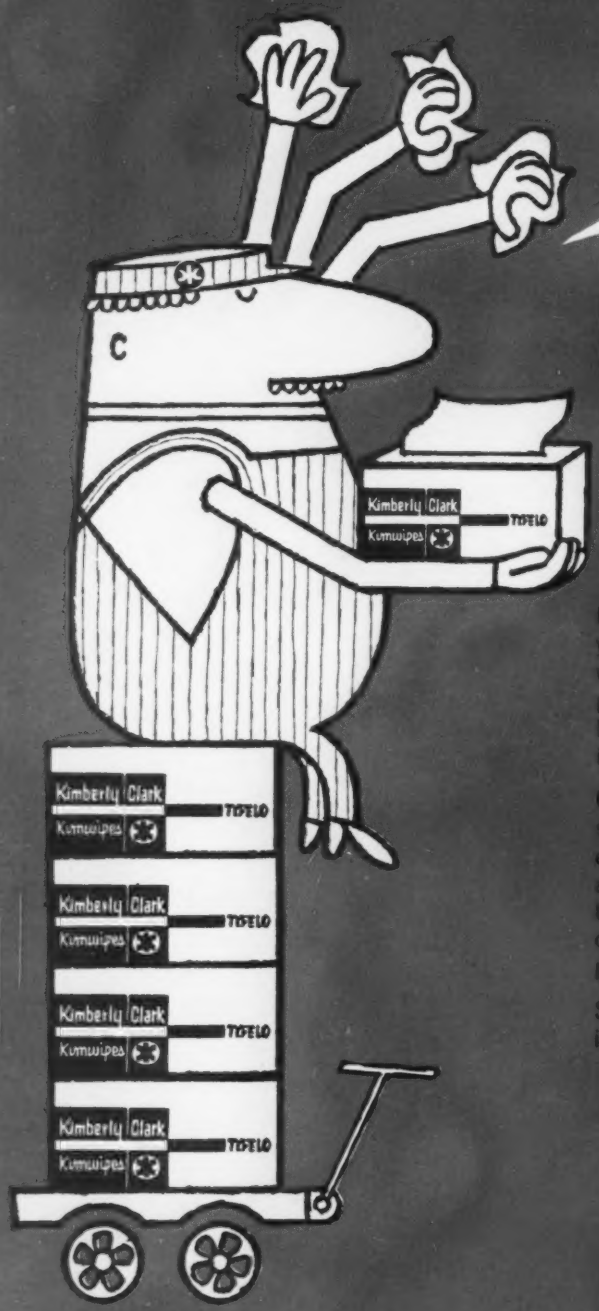
$1.00

FOOD ENGINEERING

BETTER MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

A CHILTON PUBLICATION

14 DAY SURVIVAL FOOD SUPPLY FOR 2 PERSONS
(RECOMMENDED BY THE OFFICE OF CIVIL AND DEFENSE MOBILIZATION)
Types of Food | Amt. Recommended | Amt. Purchased | Cost
Milk | To make 14 qts. | To make 13 qt. | 1.67
Meat | 16 to 18 lb. | 18 lb. 12 oz. | 5.69
Fruit | About 14 lb. | 13 lb. 12 oz. | 3.61
Vegetables | About 28 lb. | 27 lb. 12 oz. | 5.59
Cereals and breads | 10 to 14 lb. | 12 lb. 5 oz. | 4.65
Sweets and Nuts | 2 to 4 lb. | 2 lb. 7 oz. | .70
Spreads (inc. butter) | No limit | 2 lb. 14 oz. | 2.35
Drinks & Condiments | No limit | 1 lb. 4 oz. | 2.10
79 lb + milk | 26.36
TOTAL COST 26.36 + .79 TAX = 27.15
113 ARTICLES -- 67 ITEMS
FALL-OUT SHELTER FOODS— Tomorrow's Market?
FRUIT
MILK
CEREALS & BREADS
DRINKS
SWEETS
VEGETABLES
SPREADS (INC. BUTTER)
MEAT



Try 'em before you buy 'em!

Free package of Kimwipes®

DISPOSABLE WIPERS

Mail the coupon today so that we can rush you your FREE box of 100 Kimwipes disposable wipers. Try Kimwipes in your own plant to prove to your satisfaction that they perform like the best laundered cloths in food processing operations.

Use Kimwipes for thorough absorption of shortening oils and grease. Use them wet for easy removal of sticky frosting, syrups, sugar and flour from workers' hands and machinery. Use both wet and dry for keeping equipment clean and sanitary. Available in handy pop-up packages or metal wall dispensers.

Super-sanitary Kimwipes pay for themselves in savings on towel laundering, alone!

By the makers of KLEENEX® tissues . . .

Kimberly Clark

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Please send me my FREE package of Kimwipes disposable wipers, Type 900-L.

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Department Number E-80

Neenah, Wisconsin

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FOOD
FOR MANAGEMENT

AUGUST 1960

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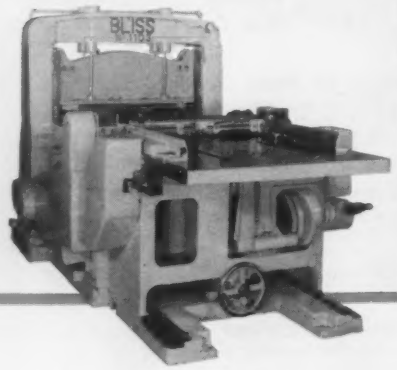
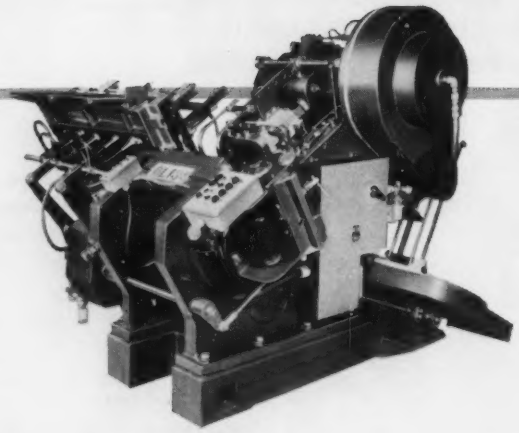
New #1103 Automatic Scroll Shear offers highest production rate ever, shears both lithographed or plain sheets up to 36" square. There's no idle stroke...every stroke is a cutting stroke. First table retracts to permit regrinding of cutters with a conventional cutter grinder without taking them off.

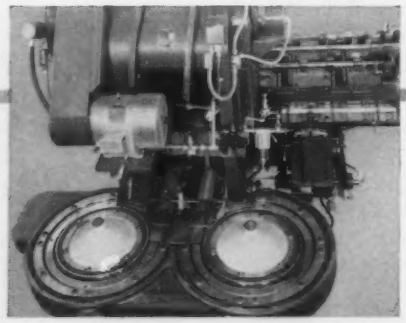




High speed #1831 Strip Feed Press blanks and forms can ends up to 404 diameter in double dies. Speeds range from 250 to 325 s.p.m. producing up to 600 or more ends a minute.

You can end CAN END production problems with these Bliss machines

(More Bliss end lines are in use than any other make)



Double end #20 Automatic Curler curls ends from 2" to 4¼" diameter; is designed for use with #1831 Strip Feed Press. Independently motor-driven, it does not rely on the press for its drive.

These machines incorporate many refinements in designs that have been thoroughly proved in production over the last four years. Write today for detailed information.

BLISS SINCE 1837

E. W. BLISS COMPANY · Canton, Ohio

BLISS is more than a name—it's a guarantee

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FOOD ENGINEERING (formerly Food Industries) August, 1960, Vol. 32, No. 8.

Published monthly by Chilton Company; Executive, Editorial, Circulation and Advertising Offices, Chestnut & 56th Sts., Phila. 39, Pa., Second class postage paid at Philadelphia, Pa.

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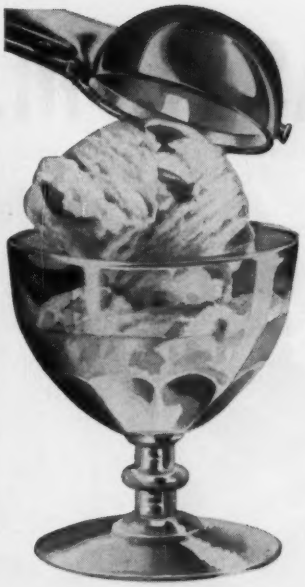


YOUR DISH OF ICE CREAM . . . AND

FRICK

REFRIGERATION

What's *your* favorite . . . chocolate, vanilla, strawberry or butter pecan?

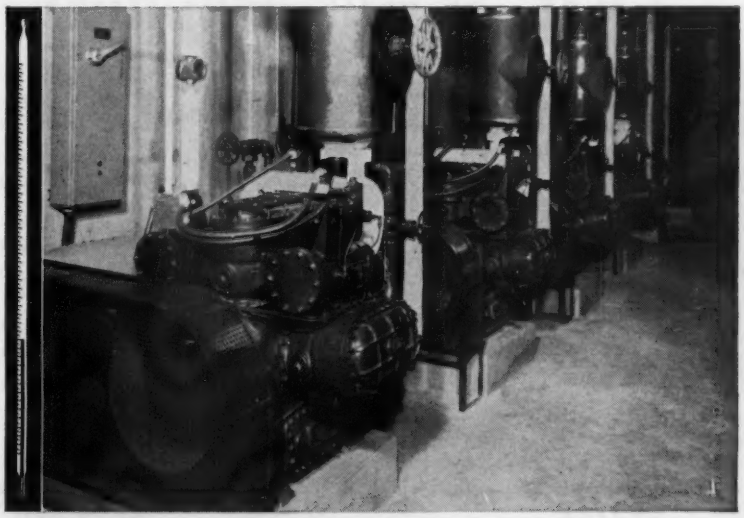
Whatever it is, the freshness and flavor of ice cream are perfected and preserved by refrigeration . . . from the time the fruit is picked to the time the plate is served.

The Frick Company, pioneers in commercial refrigeration for *all* industries, supplies equipment to ice cream manufacturers throughout the world.

The Detroit Creamery Company, a Division of National Dairies, is only one example of a Frick installation.

Whatever your products . . . whatever your refrigeration problems . . . Frick sales engineers will be happy to discuss them with you. No obligation at all.

FRICK COMPANY • Waynesboro, Pennsylvania



• Here are four 9-cylinder and one 6-cylinder Frick compressors installed at the Detroit Creamery that produces all kinds of dairy products . . . ice cream, milk, cottage cheese and dry milk products.

1500 CASES/hr.

increase casing speeds 25 TO 50%

Model FM 42 Case Set-Up Machine, shown here integrated with an FMC Non-Shock End-Open Caser, in field test operation at one of California Packing Corporation's plants.

—with the NEW SURE-WAY®

CASE SET-UP MACHINE

If you have either an FMC Non-Shock Caser for cans, or a "Sure-Way" Package Caser, consider the additional speed, efficiency and savings in operator manhours now available to you with the new, *fully-automatic "Sure-Way" Case Set-Up Machine.*

Under present conditions, if you are operating your caser in the area of 1200 cases an hour, you are probably using two or three operators to set up and feed cases to the machine. *Add a "Sure-Way" Case Set-Up Machine and experience these benefits:*

- *Up production to 1500 cases an hour*
- *Reduce manpower by 1 or 2 men*

The only manual function involved is that of placing flat shipping cases in the feed magazine of the Set-Up Machine—it's as simple as that. In fact, one man can easily attend two automatic lines at the same time.

An extremely versatile unit, this machine can be made to handle top, side or end-open cases as large as 25″ x 24″ x 18″, or as small as 7″ x 7″ x 3″—and given ranges between these extreme limits. Moreover, it is easily adapted and integrated to existing caser installations, and in many instances may be furnished with a "Sure-Way" Case Sealer for a fully integrated operation.

Get full information on this precision engineered equipment today—for more profitable casing operations tomorrow.

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

Canning Machinery Division

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WESTERN: SAN JOSE, CALIF. • EASTERN: HOOPESTON, ILL.

TRENDS & FORECASTS

SPECIAL FOOD ENGINEERING SERVICE to EXECUTIVES

Expansion in the food industry is at rate of $3 billion a year, the total volume having gone from $16 billion in '39 to $76 billion in '60, according to GMA. Important in this growth is the creation of new products through investment of 100 million research dollars a year.

Rapid rise of consumer income abroad continues to offer opportunity for American companies to sell convenience foods in foreign areas, according to Value Line Investment Survey.

USDA estimates that increases in per capita quantity and expenditures for processed foods for home consumption are likely to be half again as much as those for relatively unprocessed foods in the next 15 to 20 years.

Expenditure for new plant and equipment by food and beverage manufacturers increased in the second quarter from an annual rate of $900 million to $1 billion. It is expected to continue at that level in the third quarter, according to the Department of Commerce.

Output of salad dressings, mayonnaise and other dressings increased 7% in '59, according to U. S. Census Bureau and Business and Defense Services Administration. Production of salad dressing amounted to 57.1 million gal., and that of mayonnaise, 54.6 million gal.

This year's corn crop is forecast at 4,079,151,000 bu. by the U. S. Department of Agriculture. This is less than last year's record output of 4,361,-170,000 bu.

Wheat production forecast by USDA for this year totals 1,347,468,000 bu., compared to 1,128,151,000 bu. last year. Of the 1960 crop, spring wheat accounts for 257,451,000 bu.

Acreage of nine principal vegetables for processing is approximately equal to last year's plantings, but 10% below average, according to the USDA Crop Reporting Board.

Reductions in acreage from last year are indicated for sweet corn, down 3%; cucumbers for pickles, 7%; tomatoes, 1%. Increases are: green lima beans, up 15%; snap beans, 6%; beets for canning, 7%; kraut cabbage, 14%; green peas, 2%; spinach, 2%.

Annual production of fruit spreads is running 17% ahead of '59, according to National Preservers Association. With an index of 100 for '47-'49, the preserve industry index rating hit 181.9 last year, and 215.4 for March, '60.

More than 50% of the nation's sugar is now used by food processors, compared to 35% only a decade ago. This results from the increase in consumption of processed foods.

Value added by manufacture increased 28% in the fluid milk industry between '54 and '58, according to new data from Census of Manufactures. This gain was achieved with a reduction of 9% in man hours. Capital expenditures made to improve operations amounted to $130.4 million, a gain of 32%.

Decline of 16% in the 1960 spring pig crop, to 49.1 million head, is reported by USDA. The combined fall and spring pig crops will amount to 90.6 million head, 11% less than last year and 1% below average.

Total wheat flour production for the first ten months of '59-'60 crop year was 211.3 million cwt., compared to 207.3 million cwt. for the same period of '58-'59.

See Developments to Watch p. 13

KELCO COMPANY

KELCO
REFINED ALGIN PRODUCTS

technical bulletin

Use unique Kelco Algin Colloids to improve your food products

SALAD AND DESSERT GELS made with KELCO-GEL HV have superb body and excellent texture. They will not melt, soften or show leakage at room temperatures. Mold release is fast and clean, without heat.

DIETETIC PUDDINGS made with KELCO-GEL LV have firm velvety body for added taste and eye appeal. Palatability of low sugar formulations is greatly improved by the gelling action of KELCO-GEL LV.

PACKAGED DRY MIX DESSERTS made with KELCO-GEL HV and KELCO-GEL LV absorb cold water rapidly to produce uniform, tender-textured puddings, gels and fillings that are extra light and effectively stabilized.

No More Effective Way To Produce Clear, Sparkling Food Gels

Tailor made to produce clear sparkling gels, the KELCO-GELS are sodium salts of alginic acid that are highly soluble in water.

KELCO-GEL HV is recommended for use where considerable added viscosity is required with a minimum amount of stabilizing action.

KELCO-GEL LV is recommended for use where a high degree of stability is desired along with a minimum change in viscosity and body properties.

Yours On Request: Free samples of KELCO-GEL HV and KELCO-GEL LV and new Technical Bulletins describing these unique Kelco algin products. At your service, too, are highly qualified food technicians ready to give individual attention.

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Cable Address: KELCOALGIN — CLARKNEWJERSEY

Schedule of Events

August

15-19—National Dietary Foods Assn., convention; Americana Hotel, Miami Beach.

21-24—National Assn. for Specialty Food Trade, Fancy Food & Confection Show; Astor Hotel, N.Y.C.

22-23—American Soybean Assn. and National Soybean Processors Assn., joint conference; Peabody Hotel, Memphis, Tenn.

September

1- 7—International Congress on Nutrition, meeting; Sheraton-Park and Shoreham Hotels, Washington, D. C.

11-14—Produce Packaging Assn., convention & exposition; Americana Hotel, Miami Beach.

11-16—American Chemical Society, national meeting; Statler Hilton Hotel, N.Y.C.

14-16—National Industrial Conference Board, marketing conference; Waldorf-Astoria Hotel, N.Y.C.

16-18—National Poultry, Butter & Egg Assn., convention; Sherman Hotel, Chicago.

25-29—Master Brewers Assn. of America, convention; Statler Hilton Hotel, Los Angeles.

26-30—Instrument Society of America, conference & exhibition; Coliseum, N.Y.C.

HORS D'OEUVRES

Almost half of all mustard is consumed on hot dogs, says R. T. French Co. And without the tangy condiment, probably only half as many hot dogs would be consumed.

Forty-three percent of the nation's 66 million employees drink at least one cup of coffee daily during a work break, General Foods reports. Coffee probably has done as much to boost efficiency as the efficiency experts.

One of five employees makes his own brew from instant during coffee breaks. Apparently many factory cafeterias either don't brew top quality, or they're slower than instant on the draw.

Senator Humphrey has been prodding the Federal Trade Commission to take action against retail chains and spend less time developing economic reports. He's of the school that believes that action speaks louder than words.

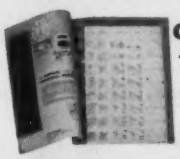
Bass Breweries in Burton-on-Trent, England, announces a concentrated beer. You add soda water and drink. Just what the world has been waiting for—instant beer!

NEW...STAINLESS STEEL AUTO-STOP LIQUID METER

It's here! *Automatic formula control* for the batching of corrosive liquids or liquids that must be kept free from contamination! It's the new Neptune Stainless Steel meter with all-stainless, Auto-Stop valve. The register watches the delivery, automatically trips the valve shut at the exact quantity. Valve is mechanically coupled...no inaccuracies due to time-lag in cut-off.

Saves time, ingredients, labor...puts end to spoiled batches...cleans up hazardous or messy conditions...provides accurate cost records. Accuracy is completely protected from effects of corrosion or corrosive wear. Only two moving parts in meter contact liquid. Gear train is outside the casing, isolated from liquid.

Size 1½", capacity 20 to 100 gpm. Also available with repeating Auto-Stop that "remembers" formula, and with ticket printing and electrical Auto-Switch combinations.



GET THE FACTS
Ask for helpful Meter Data Bulletin 566 LF See Neptune Data Pages in Chemical Engineering Catalog.

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LIQUID METER DIVISION
47-25 34th St., Long Island City 1, N.Y.

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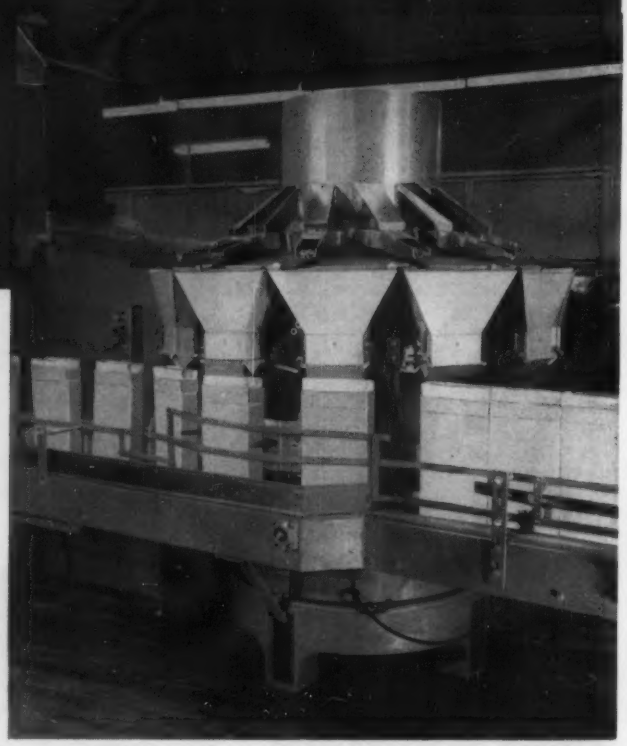
CIRCLE 9 ON READER SERVICE CARD

Wright NT WEIGHER



Exceptional ***Accuracy at High Speed plus the advantages of Straight-Line Production***

Wright NT Weigher . . .

so fast that it handles the total output of a continuous production process such as a giant bakery oven.

so accurate that its weight reliability exceeds that of many competing systems which operate at slower speeds.

• The product being packaged flows to approximately 95% of desired net weight into 12 buckets mounted edge-to-edge on a rotating turret. The remaining 5% is finish-filled into the buckets by their individual feeders.

• After the desired net weight is reached, product is dumped into an awaiting moving carton.

• Weighing is electronic.

• There are no intermittent motions. Product flow and carton flow are continuous. Production is straight-line.

• The system automatically adjusts for variations in product flow and density.

Your inquiry is invited. Wright Machinery Company Division of Sperry Rand Corporation, Durham, North Carolina.

WRIGHT MACHINERY COMPANY

DIVISION OF SPERRY RAND CORPORATION • DURHAM, NORTH CAROLINA

Gentlemen: Please send me technical details on your new Wright NT Weigher.

NAME.....

COMPANY.....

ADDRESS.....

.....

CIRCLE 11 ON READER SERVICE CARD →

Cost-cutting step taken 26 years ago still paying off at Hamm Brewery —they chose NONPAREIL Turbine Oil

Situation: In 1934 the Theo. Hamm Brewing Company installed two 1,000 kw. turbines. The brewing firm wanted to be sure there would be no down-time due to failure of the lubricant. Neither did the company want to spend time checking the oil's performance or adding new oil to sweeten the old.

What was done: Brewery management followed the advice of the Standard Oil lubrication specialist. They installed NONPAREIL Turbine Oil, the only oil, then as now, that carries with each fill a life-of-turbine guarantee.

What has happened: In 26 years since the turbines were put in service there has never been any down-time due to lubrication problems. In 1947 a 2500 kw. turbine was added to the system and another 3000 kw. unit was put in service in 1953. These, too, have used NONPAREIL Turbine Oil with the same results.

What you can do: Get the full story on NONPAREIL Turbine Oil from the Standard Oil office near you in any of the 15 Midwest and Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**

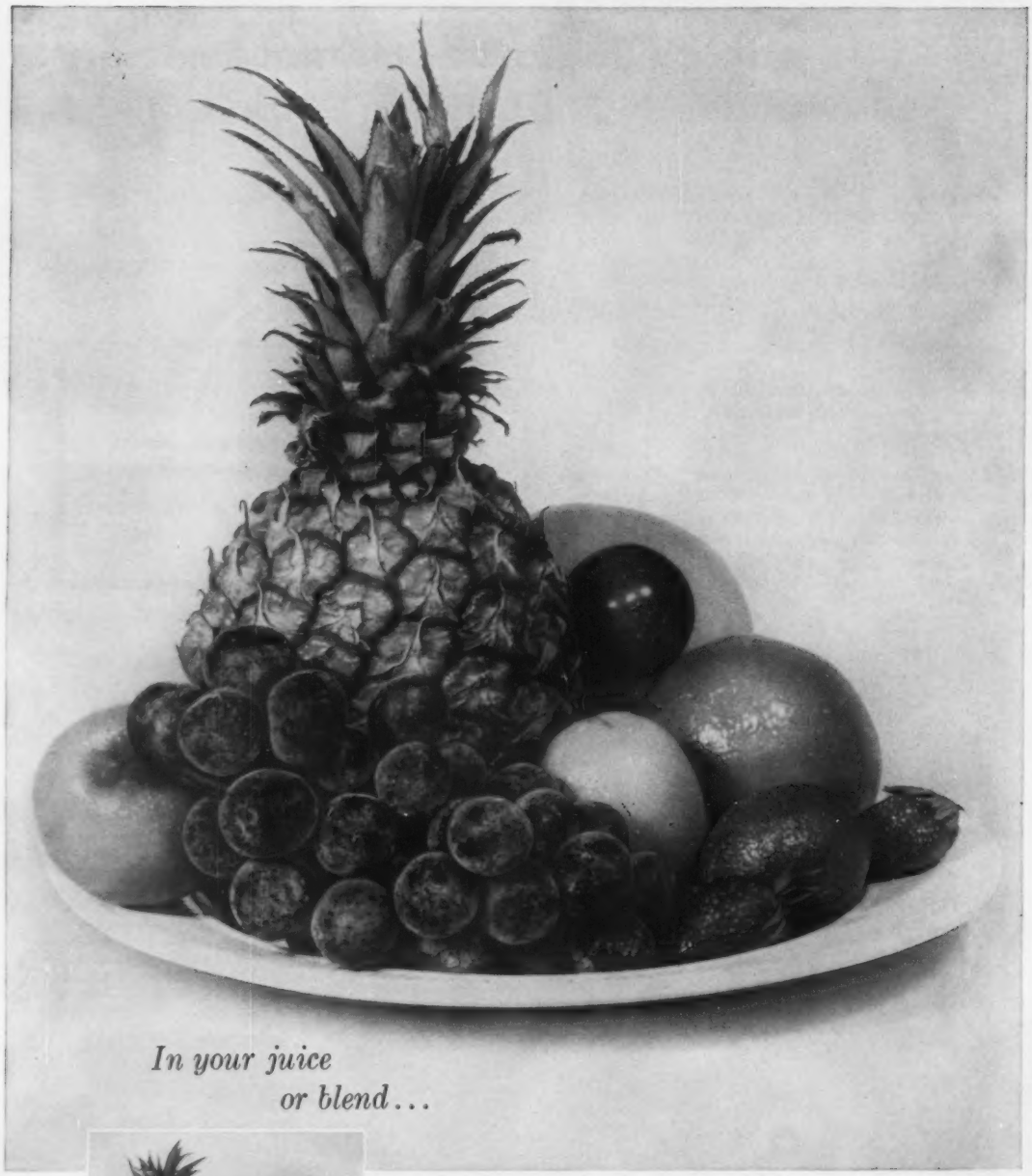
Quick facts about **NONPAREIL Turbine Oil**

- Will not permit formation of harmful acids
- Will not permit formation of sludge or oil varnish
- Will maintain good demulsibility or water separating characteristics
- Has high resistance to foaming
- Contains adequate rust inhibitor

You expect more from **STANDARD** *and you get it!*

Hamm Brewing Co. assistant chief engineer Steve Wappel and Standard's Dick Anderson discuss recent oil analysis. Dick Anderson knows his way about an industrial power plant. He's been providing customers with technical service on lubrication for five years. Dick has an engineering degree from the University of Minnesota and has completed the Standard Oil Sales Engineering School.

Keep Faith With Nature—Guard Her Goodness



In your juice
or blend...

STANDARDIZE—*don't jeopardize*

Nature never standardizes the vitamin C content of fruits. Nature's never uniform. Uniformity varies. So standardize —don't jeopardize—juice uniformity.

Standardize on juice excellence, with Roche® vitamin C (ascorbic acid). Capitalize on quality. Give fruit juices and their blends: acceptable vitamin C levels, ripe-fruit-flavor richness, a nutritional label claim.

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DEVELOPMENTS TO WATCH

SPECIAL FOOD ENGINEERING SERVICE to EXECUTIVES

See Who's Building What p. 17

Washington Report p. 23

Approval has been granted by the Food and Drug Administration for sources of radiation that may be used for inspection of foods and food packages and for controlling processes. Permissible are x-ray tubes up to 300-kv. peak level and sealed cesium 137 or strontium 90 radiating at levels up to 2.2 million electron volts.

New General Mills flour plant in Buffalo has metal interior walls for sanitary construction. Walls are flat galvanized-steel panels sealed at joints. Panels are 12 in. wide, 40 ft. long.

Single-wall bag of polymer coated "K" cellophane retains "salable freshness" of potato chips and other snack items up to six weeks, or about twice the shelf-life normally anticipated for such products. So reports Du Pont researchers.

Latest in aerosol items is Spray O'Hickory, a seasoning that imparts a hickory smoked flavor to meats that are broiled. It is an innovation of Gard Pressure Foods Corp., Northfield, Ill.

Starch phosphates have been put into pilot plant production by American Maize-Products Co., and commercial quantities may be made by the end of the year in a large-scale unit. The result of a long-range development program, the new starch phosphates are known chemically as esters. Characteristics include cold-water solubility, greater thickening power than corn starch, bland flavor, and remarkable freeze-thaw stability.

A new antioxidant cellophane to protect shelf-life of potato chips and other snack items has been developed by Olin Mathieson Chemical Corp. Shelf-life is reported to be increased as much as 50% compared with chips packaged in standard cellophanes. FDA approval for the antioxidants is reported by OM.

Miniature radios have been used experimentally to transmit the temperature of foods in freezers. In work done at Western Regional Research Lab of USDA, Albany, Calif., transmitters were strategically placed in packs to be frozen. Temperatures broadcast were picked up by a receiver which automatically tuned in transmitters in sequence.

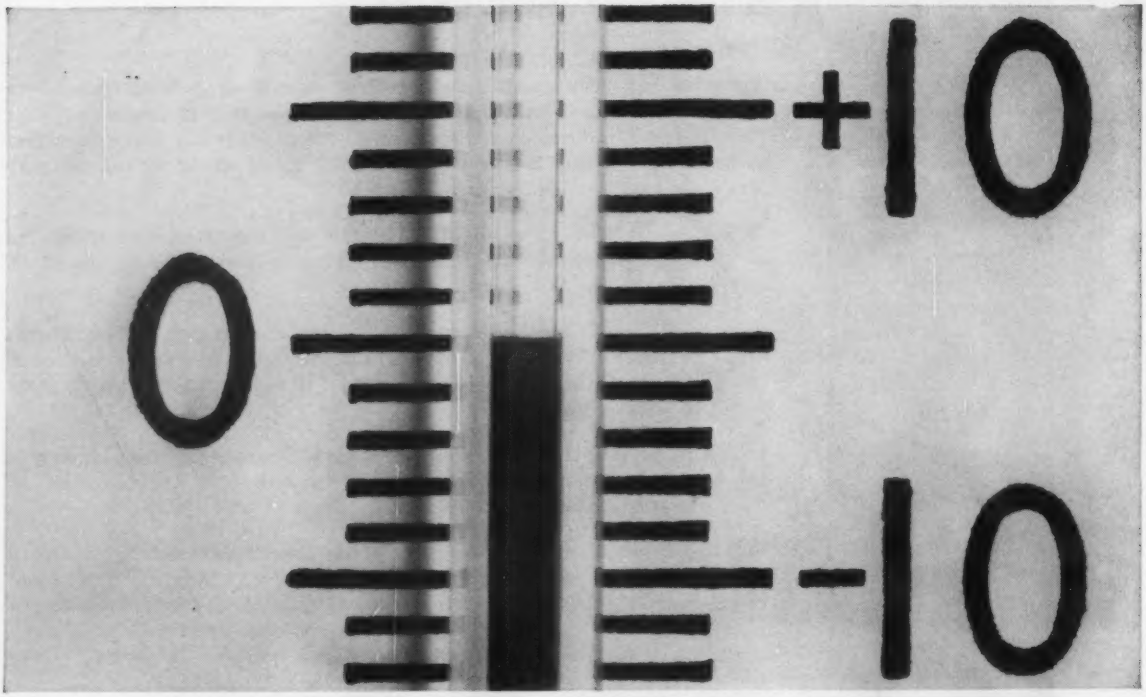
Improved apparatus that determines the amount of moisture and fat in meats and other foods has been announced by Delmar Scientific Laboratories, Chicago. The equipment separates the moisture from the fat and quickly and accurately determines the amount of moisture present.

Little loss of flavor after twelve months of storage at 0 F. occurs in frozen deep-fat-fried green bean sticks, mixed vegetable sticks, green bean fritters, and mixed vegetable fritters, according to studies at Oregon State College. The items were tested in a program to develop new convenience foods.

Control of corn earworm can now be achieved with Sevin insecticide, which makes it permissible to use the treated forage and cannery waste as feed for dairy cattle and other livestock. This substitute for DDT has been cleared by the U. S. Department of Agriculture, according to Union Carbide Corp.

Quaker Oats has developed corn chips in the form of thin, translucent pieces which become fluffy when deep-fried. This experimental product is aimed at chippers who would use it as a convenient raw material for easy production of a finished item.

Revolutionary milling process at General Mills, called Bellera "Air Spun," produces superior flours while cutting sharply the multitude of steps formerly required. Other features: Direct flow of stocks, substantial space saving, pushbutton controls.



Zero in on Frozen Foods with genetron®

SUPER-DRY REFRIGERANTS

From packing house to supermarket, actual zero temperature (or lower!) is *always* needed to maintain freshness, quality and flavor of frozen foods and to prevent spoilage. That's why you can't take chances. Whatever way your frozen foods are transported—by rail, truck or on board ship—however they are packed, stored or sold—they need the sure protection of modern refrigeration equipment . . . and dependable "Genetron" fluorinated hydrocarbon refrigerants.

"Genetron" Super-Dry Refrigerants are available from refrigeration and air-conditioning wholesalers from coast to coast. See your wholesaler. Insist on "Genetron" in *all* your frozen food refrigeration equipment!

Quick Facts on "Genetron" Super-Dry Refrigerants

- Guaranteed exceptionally low moisture content
- Noncorrosive to standard equipment materials, nontoxic, nonflammable, stable, safe
- Critical and freezing points well outside range of operating uses
- Solvent action on oil helps prevent solidification or congealing of lubricant; aids in lubrication of equipment; generally miscible with oil
- Freely interchangeable and may be mixed in any proportions with comparable fluorinated hydrocarbons meeting the same strict refrigerant specifications

genetron 11 ORANGE LABEL CCl_3F TRICHLOROMONOFLUOROMETHANE
genetron 12 WHITE LABEL CCl_2F_2 DICHLORODIFLUOROMETHANE
genetron 22 GREEN LABEL $CHClF_2$ MONOCHLORODIFLUOROMETHANE
genetron 113 PURPLE LABEL $C_2Cl_3F_3$ TRICHLOROTRIFLUOROETHANE
genetron 114 BLUE LABEL $C_2Cl_2F_4$ DICHLOROTETRAFLUOROETHANE

Basic to America's Progress

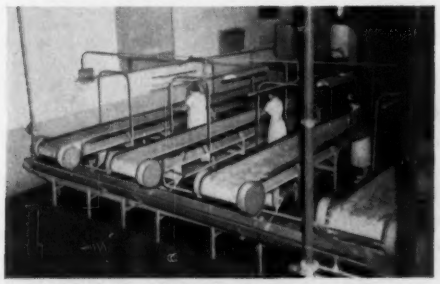
Allied Chemical

GENERAL CHEMICAL DIVISION
40 Rector Street, New York 6, N. Y.

Profitable Processing in a Sportsman's Paradise...

VIRGINIA

SPORT FISHING in the Atlantic Ocean and Chesapeake Bay offers endless variety . . . from mighty Marlin to tasty Perch. Heritage of fine foods includes crab, clams, oysters, chicken, and Virginia ham. Most Dulany supervisors and employees are interested in boats, fishing, and hunting. Officials say, "Not one of our men would want to leave this area."



NATIVE DULANY-TRAINED employees perform the many skilled operations required by the plant and are alert to suggest new and improved production techniques. Labor relations are ideal. Company personnel are active in community affairs and in the area's economic development program.

Dulany Foods Inc. looked at numerous sites before locating its pioneer food freezing plant at Exmore, on Virginia's Eastern Shore. Deciding factors: dependable labor . . . proximity of rich farmlands . . . active interest in industrial development on the part of the community.

Today, Dulany freezes 15,000,000 lbs. of food a year, and additional cold storage facilities are being built. From the plant, food is distributed to all states east of the Mississippi. Dulany officials work closely with the Virginia Truck Experiment Station at Exmore . . . new products are constantly being added.

Ralph O. Dulany, President, says, "The 'gracious living' tradition which characterizes the area is responsible for continuing employment stability. The business climate, as evidenced by fine cooperation from State and local governments, community organizations, and citizens, is excellent."

In addition to profitable operation, Dulany officials enjoy a big bonus in good living. They say, "We don't operate under pressure. We get the job done but still can take time out for good fishing and hunting within minutes of the plant." Find out why so many progressive companies are locating in Virginia. Visit, phone, wire or write . . . in complete confidence.

C. M. Nicholson, Jr., Commissioner
Division of Industrial Development
Virginia Department of Conservation and Economic Development
State Office Building, Richmond 19, Virginia
Telephone: MIlton 4-4111 Ext. 2255

You, too, can find these... and many other great competitive advantages in **VIRGINIA**
... a wonderful place to play or work

How's Your Appetite?- for Profits!

The people we please have particular tastes — *and a healthy appetite for profits!* Our business is formulating quality ingredients and lab-controlling their manufacture. As far as we're concerned, it's the most important business in the world! If you feel intense about the future of your product, you need the quality of products we manufacture for foods worthy of a reputation. We'll be happy to hear from you.

THE GRIFFITH LABORATORIES, INC.

CHICAGO 9, 1415 W. 37th St.

UNION, N. J., 855 Rahway Ave.

LOS ANGELES 58, 4900 Gifford Ave.

Griffith

WHO'S BUILDING WHAT...

Monthly Reports: These food firms will spend $11,957,049 for expansion.

Low Bids/Contracts

Anheuser-Busch, Inc., San Fernando, Calif., brewery addition, $4,500,000.

Cagles, Inc., Macon, Ga., plant, $144,460.

Dr. Pepper Bottling Co., Lubbock, Texas, bottling plant, $125,000.

General Foods Corp., Houston, Texas, coffee plant addition, $278,125.

Hebrew National Kosher Co., Maspeth, N. Y., meat packing plant, $750,000.

Hunt Foods & Industries, Inc., Davis, Calif., processing plant, $1,084,000.

Oscar Mayer Co., Houston, Texas, plant, $172,000; Miami, Fla., warehouse, $114,000.

John Morrell & Co., St. Paul, Minn., packing plant, $110,000.

Pepsi Cola Bottling Co., Tampa, Fla., bottling plant, $350,000.

Seven-Up Bottling Co., Nashville, Tenn., bottling plant, $729,464.

Stahl-Meyer, Inc., Hunts Point, N. Y., meat processing plant, $2,700,000.

United Dairymen of Arizona, Tempe, Ariz., processing plant, $500,000.

John Wagner & Sons, Ivyland, Pa., processing plant, $400,000.

Proposed Work

American Milling Co., Red Oak, Ia., hog processing plant, $3,000,000.

Dr. Pepper Bottling Co., Lubbock, Texas, bottling plant, $135,000.

Theo. Hamm Brewing Co., Baltimore, Md., stock house, $750,000.

H. L. Hunt Products Co., Dallas, Texas, food plant, $1,000,000.

National Biscuit Co., West Haven, Conn., warehouse, $250,000.

Pepsi-Cola Co., Youngstown, Ohio, bottling plant, $200,000.

Another in a series of Hoerner Corrugated Shipping Container Experts

THIS IS THE HOERNER SPECIALIST FOR PACKAGING ARTY THINGS

Hoerner experts have established a modern renaissance in packaging protection. Especially in arty things, where a small chip or scratch can be very expensive. Whether your problem is a delicate piece of sculpture or a brutish hunk of pipe, let Hoerner contain it. And keep the red paint out of your profit picture.

HOERNER BOXES, INC.

Corrugated Specialists for Mid-America

GENERAL OFFICES: 600 Morgan Street, Keokuk, Iowa • PLANTS: Fort Smith and Little Rock, Ark.; Des Moines, Keokuk and Ottumwa, Iowa; Danville, Illinois; Minneapolis, Minn.; Tupelo, Miss.; Springfield, Missouri; Sand Springs, Okla.; Sioux Falls, South Dakota; Fort Worth and Mission, Texas • ASSOCIATE: Cajas y Empaques Impermeables, S.A., Mexico City D.F., Mexico

THE UNCOMMON DENOMINATOR—Other people *make* foil containers; Ekco-Alcoa *creates* them. And whenever you discover a really new and different foil container, you will see the Ekco-Alcoa Plus Container mark. Case in point: bright, new Smoothfoil, pictured below, the first rigid foil container that offers a true hermetic seal (neither air nor moisture can get in or out), opening up a completely new field of packaging opportunity.

This kind of creative imagination, the uncommon denominator among packagers, is the philosophy of business that guides the entire company. This is why Ekco-Alcoa has, by far, the largest line of stock containers in the industry, and is always willing to create a new container for your special applications.

EKCO-ALCOA CONTAINERS INC.
WHEELING, ILLINOIS

EKCO is the registered trademark of Ekco Products Company; ALCOA is the registered trademark of Aluminum Company of America. The corporate name and combination mark, EKCO-ALCOA, is used under license to the manufacturer by each of these companies.

tomorrow... eye-appeal depends first on color!

It's as true now as it was when we first began to serve the industry over a half century ago. Color is the dominant attraction in any setting that makes good food look "good enough to eat."

Today, our conveniently located customer-service laboratories help food processors to produce desired shades with the utmost economy compatible with their specific requirements. To accomplish this, we rely on our long experience and the most comprehensive spectrum of certified food colors made!

Looking to the future, our Research and Engineering Center is engaged in intensified research to expand our range of standardized colors and improve application techniques. Through their efforts, we will be able to continue to formulate the shades you want.

That's why, more than ever before, it pays to call National Aniline first.

NATIONAL® CERTIFIED FOOD COLORS

NATIONAL ANILINE DIVISION
40 RECTOR STREET, NEW YORK 6, N. Y.
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Philadelphia Portland, Ore. Providence San Francisco
In Canada: ALLIED CHEMICAL CANADA, LTD., 100 North Queen St., Toronto 18
Distributors throughout the world. For information:
ALLIED CHEMICAL INTERNATIONAL • 40 Rector St., New York 6, N. Y.

Allied Chemical

BEFORE—This is how the cold storage room of Seaway Wholesale Food Company, Cleveland, Ohio, looked a few months ago. Dark areas made labels hard to read, overall appearance was depressing.

AFTER—Here's the same room today—with G-E T10J Fluorescents. Better lighting the length of the stacks makes it easy to find what you're looking for, and the company now gets 3 times as much light per watt.

Now! A fluorescent lamp that stays bright—even at 5° below zero!

Cold room operators have always known of the advantages of fluorescent lighting—lower maintenance costs . . . less heat generated for the same amount of light . . . fewer shadows . . . and more efficient use of current giving you more light for your money. Only trouble is, ordinary fluorescents do a "cold weather fade out" when temperatures drop. They can lose up to 90% of their light or more.

But now you can lick this problem with General Electric's T10, and its jacketed companion lamp, the T10J. These new G-E lamps actually grow *brighter* as the thermometer *drops!* For specific data on this all-new line of fluorescents, write: General Electric Co., Large Lamp Dept. C-027, Nela Park, Cleveland 12, Ohio.

G-E T10 for single lamp operation in tightly *enclosed* fixtures outdoors, or in open fixtures indoors. Rated at 13,000 lumens peak output, it looks like an ordinary fluorescent.

G-E T10J neither *looks* nor *acts* like an ordinary fluorescent. It has a special glass "storm window" to lick "cold weather fade out "when operated exposed in suitable fixtures.

Progress Is Our Most Important Product

GENERAL ELECTRIC

GENERAL ELECTRIC . . . WHERE BRIGHT IDEAS BECOME BETTER LAMPS

Shoot for instant sales...

with sure-fire packaging!

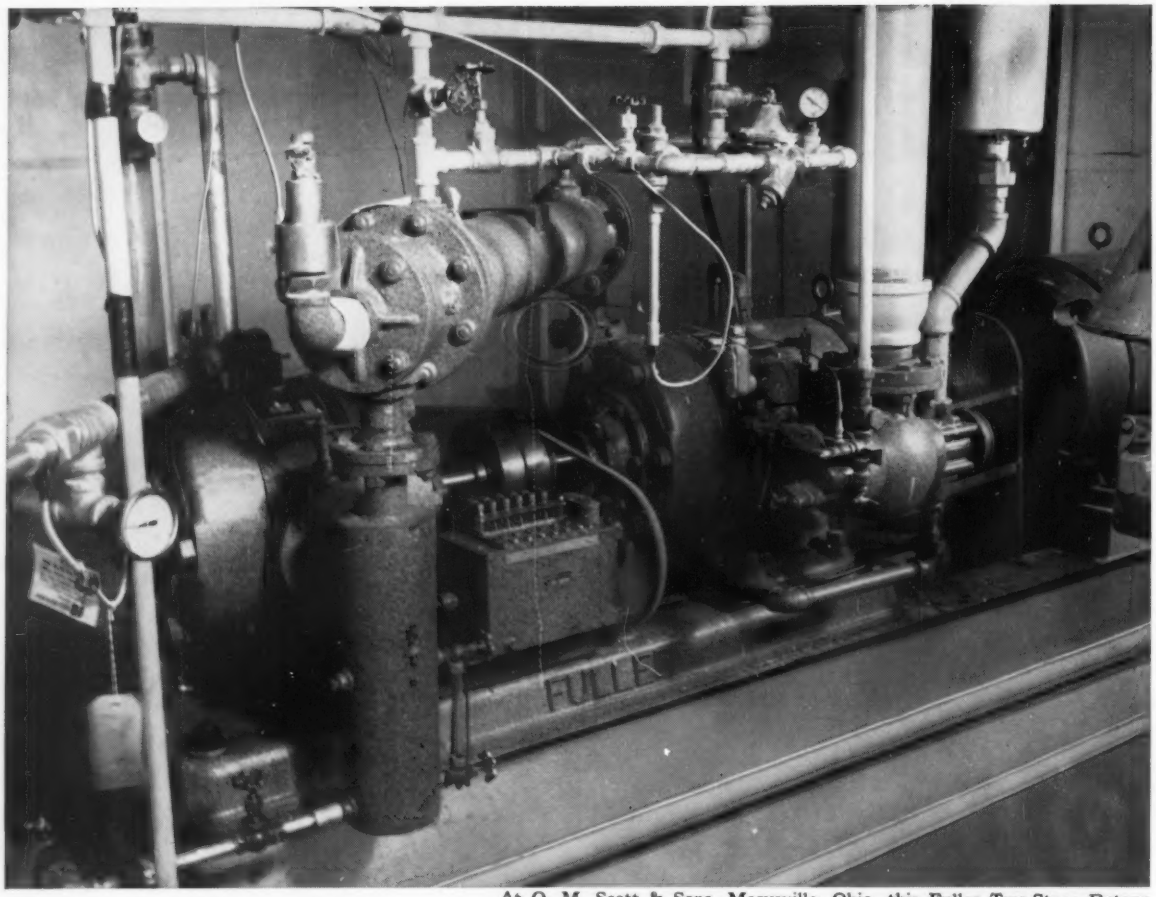
Here's protection that keeps your powder dry—just like a built-in desert! Add vivid, sharp printing, and you have the finest new packaging developed for hygroscopic products.

Look at the range of products and sizes. Milk to onions. A cupful to a bucketful. Bags, pouches, overwraps. One (or more) of these packages could help *you* increase sales and cut packaging costs.

For case histories and complete information, write Hygroscopic Packaging, 2101 Williams Street, San Leandro, California. East of Denver, write 4410 Hunt Avenue, St. Louis, Missouri.

CROWN ZELLERBACH
WESTERN-WAXIDE DIVISION

Plants and sales offices in principal cities throughout the United States. Headquarters, 2101 Williams Street, San Leandro, California. In Canada address product inquiries to Crown Zellerbach Limited, Vancouver, B.C.



At O. M. Scott & Sons, Marysville, Ohio, this Fuller Two-Stage Rotary Compressor with overhead intercooler and 60 hp motor has operated 24 hours a day straight through for one year, without downtime or maintenance.

No Air Starvation with a Fuller Compressor in the Packhouse

Maintenance Supervisor Alfred Asman of O. M. Scott & Sons, Marysville, Ohio, has high praise for their Fuller compressor: "Before we had the Fuller, we regularly had complaints of low air pressure. Since the Fuller is supplying all the packhouse air requirements, no one has complained of lack of air."

Their Fuller Rotary Two-Stage Compressor unit with overhead intercooler, producing 281 cfm, 100 lb. gage discharge pressure, has operated 24 hours a day straight through for one year—without even a sign of blade or bearing wear.

Reliable performance and dependable delivery of air, when and where needed, is only part of the story. Scott & Sons, along with others using Fuller Rotary Compressors, know that only minor maintenance of parts is all that is necessary for years to come—creating savings in labor, downtime and materials.

The key is Fuller's rotary principle which permits a design completely free of reciprocating parts. Elimination of valves, crankshafts, pistons and other moving parts cuts the need for attention, adjustment and replacement. Blades are "held" to cylinder wall by centrifugal force—automatically compensating for wear—thus maintaining new machine efficiency.

What's more, compact, easily installed Fuller Rotary Compressors are vibration-free, further reducing costs by eliminating the need for involved and expensive foundations.

A Fuller specialist will gladly discuss your compressor needs and suggest a system geared exactly to your specific situation. Write for Bulletin C5-A today or contact Fuller on your plant requirements.

2561
C360

FULLER COMPANY GENERAL AMERICAN TRADE MARK

FULLER COMPANY
114 Bridge St., Catasauqua, Pa.
Subsidiary of General American Transportation Corporation
Offices in Principal Cities Throughout the World

Fuller
....pioneers in harnessing AIR

Sugar: Prices Up, Stocks Stable

There'll be no sugar shortage although prices may increase slightly the next 6 mos. That's the word from Washington following Agriculture Dept.'s reshuffle of import quotas. New allocations, effective until March 31, should assure adequate supplies (barring unforeseen shipping bottlenecks) even for increased demand for 10 mill. tons.

Prices are expected to stabilize at slightly higher levels than before the Cuban crisis. Quota prices which formerly varied from $6.05 to $6.65 per 100 lb. fluctuated between $6.65 and $6.75 (highest since '51) after reallocations were set. They're expected to drop once buyers get their bearings.

Chief hurdle is the refining problem. Domestic refiners, used to handling raw Cuban sugar, face special technical difficulties presented by refined and semi-refined products of such sources as Mexico, Brazil, Haiti, Peru, Nicaragua, and British Guiana. Such sugar will have to be reprocessed to put it into the qualities and trade channels consumers want.

Outlook for '61? Too early to tell, government says.

Congress Tackles Key Bills

Congress resumed action this month, in a politics-loaded session, on at least 2 important bills of special interest to food industry. These are:

► **Minimum wage:** Kennedy's personal "baby," this will be a real political football. Democrats will shoot for a strong bill, Republicans a modest one Ike won't have to veto. House-passed version extends coverage slightly, doesn't affect seasonal workers like canners. Senate will probably OK a stronger version, but several parliamentary booby-traps stand in the way of final enactment.

► **Overseas profits:** House and Senate have to iron out differences on proposed law which allows firms to treat overseas plants as one unit, thus averaging out high taxes in one country against low taxes in another. Chances of agreement are rated as "even."

No Color Enforcement Bugs Seen

FDA doesn't expect any big problems enforcing the new color additives ban that became law last month. But the agency is hedging its bet with a plea for more police money.

Color makers have 2½ yrs. to run tests and submit proof that their additives can be used in limited amounts without harm. After FDA OKs tolerance levels, inspectors will occasionally spot check food products to make sure that only approved colors are being used and in specified amounts.

Will Chains Plead The 'Fifth'?

FTC's massive probe into the food industry is beginning to generate heat. Igniting the fuse is a demand put to more than 200 retailers, distributors, and suppliers that they cough up information on allowances, discounts, and "special events" promotions. Data turned up thusly is expected to lead to a score of FTC indictments.

National Assn. of Food Chains is protesting bitterly. They call FTC's new approach "mail order enforcement," and claim it requires a man in effect to testify against himself. However, industry experts feel the commission is on solid legal ground and that corporations can't, even if individuals can, take refuge in the Fifth Amendment. FTC contends the Morton Salt case a few years back ended with the U. S. Supreme Court backing its probe method.

Import Blues Resumed

With U. S. Tariff Commission hearings set for Aug. 22-24 on several food products, dairy and cornstarch people are protesting proposed lower duties. Among items to be considered by commission are cheese, bacon, fish, fowl, macaroni, vinegar, fruits, and vegetables. U. S. hopes lower tariffs will induce similar concessions abroad when GATT (General Agreement on Tariffs and Trade) is renegotiated this fall.

Makers of blue, Gruyere, and Swiss cheeses, already hurting from imports, fear lower tariffs on Roquefort, Emanthaler, Gruyere, and goat and sheeps milk cheeses. Government says proposed cuts are on items made here in small quantity, or on types not directly competitive—like Roquefort vs. blue, for example.

Corn starchers claim they're rapidly losing domestic market to low-wage imports, point out that imports tripled since '52 from 65 mill. lbs. to 238 mill.

Ice Cream Standards OK'd

FDA's long-awaited ice cream standards, which go into effect Oct. 25, permit use of artificial vanilla, one of the big points sought by processors. Artificial flavors may also be used in fruit sherbets. Also permitted are casein from skim milk (as long as it doesn't replace milk solids) and two polyoxyethylene-type emulsifiers.

Minimum standards include: Ice cream and French ice cream, at least 20% by weight of milk solids, of which 10% must be milk fat; ice milk, at least 11% milk solids, of which 2-7% is milk fat; fruit sherbets, maximum 5% milk solids, of which 1-2% is milk fat.

Ice cream must weigh at least 4.5 lbs. per gal. to avoid excessive aeration. And stabilizers can't exceed ½ of 1%.

BRIEFS

Much-criticized consumer price index will be brought up to date by BLS. Eight new items (including tomato juice, potato chips, french fries, lemonade concentrate) have been added to monthly listing, and Labor Dept. hopes to kick off 4-yr. survey on what consumers buy, how much they spend, as basis for revised index.

Problem of oxidation-induced off-flavors that develop in dehydrated foods during storage reportedly licked by Quartermaster Corps. New application of an enzyme that removes molecular oxygen from food makes possible prolonged keeping of dry whole milk and ice cream mix. Idea's being tried out on dehydrated quick-serve meals.

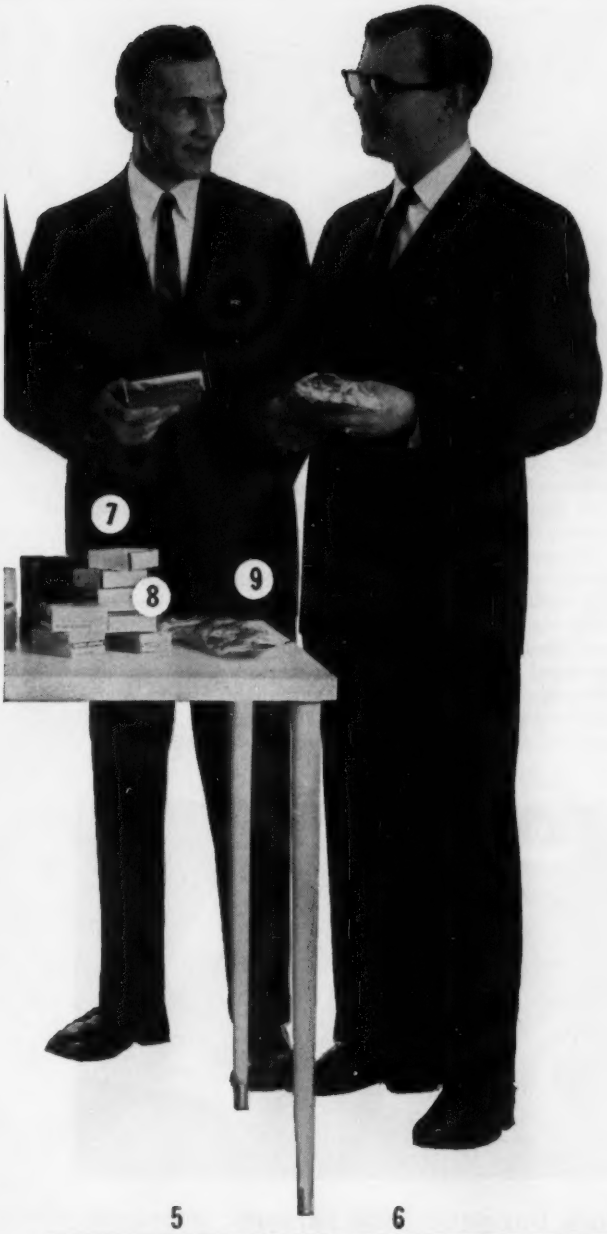
Members of the Food and Beverage Technical Service "team" shown here (l. to r.) are: Charles Feldberg, Dr. Rouben Kachikian, Joan Griffin, Everett Macdonough—Manager, John Geminder, Edward O'Neill.

PRODUCTS FOR THE FOOD INDUSTRY

1 BEVERAGE	2 MEAT PACKING	3 MILLING & BAKING	4 CANNING & PRESERVING
Sodium Citrate, Sorbistat®-K (Potassium Sorbate), Calcium Cyclamate, Sodium Benzoate, Citric Acid, Tartaric Acid, Caffeine, Ascorbic Acid, Erythorbic Acid, (Isoascorbic Acid)	Erythorbic Acid (Isoascorbic Acid), Sodium Erythorbate (Sodium Isoascorbate), Ascorbic Acid, Sodium Ascorbate, Citric Acid, Biostat®-PA (Oxytetracycline), Sodium Citrate	Bi-Cap® (flour enrichment mixtures) L-Lysine, Gluconо-Delta-Lactone, Tartaric Acid, Cream of Tartar, Citric Acid, Sorbistat® (Sorbic Acid), Sorbistat®-K (Potassium Sorbate), Sodium Benzoate, B Vitamins, Sol-U-Pak* *T.M.	Ascorbic Acid, Citric Acid, Sodium Citrate, Calcium Cyclamate, Sodium Benzoate, Tartaric Acid

Science for the world's well-being

Chas. Pfizer & Co., Inc., Chemical Sales Div., 630 Flushing Ave., Bklyn. 6, N.Y. Branch Offices: Clifton, N.J.;



Yours, from Pfizer...
HIGHEST QUALITY
FOOD INGREDIENTS
PLUS

PFIZER TECHNICAL SERVICE

(an invaluable asset)

"Quality" and "Pfizer Products" have been synonymous for over 110 years. This reputation results, in no small way, from the contributions of Pfizer Technical Service. This "helping hand" to our customers is available at every stage of product development. It is working proof of the Pfizer belief that a chemical manufacturer's responsibility extends beyond the point of making a sale.

For instance, baked goods manufacturers wanted a more controlled type of leavening action for the new "convenience" foods such as cake, general purpose, and specialty mixes. Pfizer developed Glucono-Delta-Lactone, a chemical leavening acid that imparts no unpleasant aftertaste, yet gives products excellent volume and fine even texture. In addition, G-D-L's low level of activity in storage insures longer shelf life.

When mold and yeast growth caused food freshness problems in cheese, wines, prepared salads, baked goods, etc., Pfizer Sorbistat®-K and Sorbistat® provided the means for ensuring that these products truly "stay fresher longer."

In the nutritional area, Pfizer L-Lysine has made possible great strides in improving the protein quality of foods ranging from breads to breakfast cereals...without affecting the taste or texture of the product. This essential amino acid "activates" the protein present, thus improving the total protein quality.

These are a few examples of how any Pfizer customer may benefit from our program of product assistance.

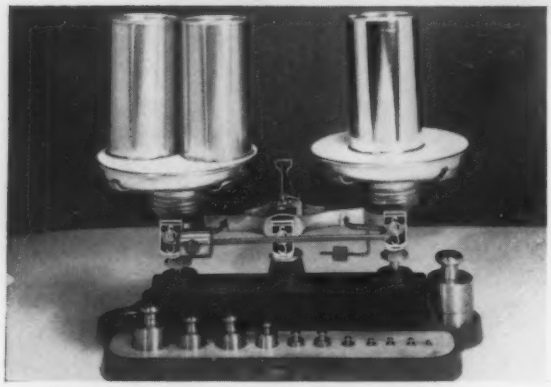
Why not put the Pfizer team to work for you?

Pfizer

5	6	7	8	9
FROZEN FOOD	**DAIRY**	**OIL AND FAT PRODUCTS**	**DESSERT**	**CANDY**
Citric Acid, Ascorbic Acid, A-C-M®	Citric Acid, Sodium Citrate, Vitamin A, Sorbistat® (Sorbic Acid), Sorbistat®-K (Potassium Sorbate), Vitamin A Palmilets* Types M & W *T.M.	Vitamin A & D, Beta Carotene, Citric Acid, Sodium Benzoate	Citric Acid, Sodium Citrate, Fumaric Acid, Ascorbic Acid, Calcium Cyclamate, Calcium Gluconate, Sorbistat® (Sorbic Acid), Sorbistat®-K (Potassium Sorbate)	Citric Acid, Calcium Cyclamate, Ascorbic Acid, Tartaric Acid, Cream of Tartar, Sorbistat® (Sorbic Acid)

Chicago, Ill.; San Francisco, Cal.; Vernon, Cal.; Atlanta, Ga.; Dallas, Tex.; Montreal, Can.

Quality Ingredients for the Food Industry for Over a Century



Aluminum vs. Tinplate Cold War Heats Up

Aluminum cans for food packaging, already making noticeable inroads into tinplate market, are now being challenged by a new "lighter and thinner" variety of tin from the big U. S. Steel Corp.

USS process permits production of plate about half the thickness of "anything now used in can making," and competitively priced with aluminum. Additional qualities of strength and rigidity for the thin tin (above left) are also expected to maintain high speed production of modern can manufacturing operations.

Food concerns are reported eagerly awaiting further R&D by both USS and large can makers such as American and Continental. Frozen concentrates, and even dinners and baked goods are considered potential market items for the USS tin. (401).

Meanwhile, large firms like Reynolds, Alcoa, and Kaiser are stepping up aluminum applications. Over 6½ million 3-piece aluminums from Reynolds were assembled and packed with Minute Maid concentrate last May. Libby had over 100 million aluminum-packaged concentrates on the market this year, and Reynolds is now promoting aluminum for lemonade, fish, and potted meats (above right) (402). But USS can will now try to hold the line for tinplate.

Film Overwrap Perks Up Produce

Sparking supermarket produce sales in Pennsylvania area are film-wrapped trays of bananas from D. Theodoredis & Sons, Bethlehem, Pa.

Package is said to perk up displays, reduce loss due to customer handling, and offer consumers a visual check on quality. Added cost of materials is reported offset by savings derived from reduced spoilage and fewer markdowns.

At firm's newly redesigned plant, rigid quality control is applied. From grading operation, bananas are conveyed through automatic packager. placed in shipping cartons, and delivered to supermarkets. American Viscose Corp. suppl¹es film.

Circle 403 on Reader Service Card

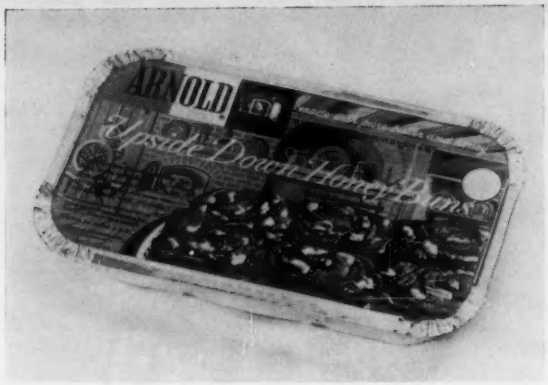
New Design . . . Old Format

General Mills has introduced a new design (Lippincott & Margulies) for eight flavors of Betty Crocker Country Kitchen Cake Mixes.

Package carries the "Country Kitchen" theme introduced by GM last October. Slice of cake is shown on a red print cloth with a subtle blending of theme "props" in the background different for each flavor. Piece of cake illustration can be placed right or left on grocers' shelves, thus breaking up monotony of GM line.

Unfortunately, new package does not relieve monotony of cake mix cartons in general, which are noted for almost uniform similarity of design.

Circle 404 on Reader Service Card



Market Upside Down Honey Buns

Bake-'em-yourself Upside Down Honey Buns, which can be oven-heated in less than 15 min., are newest product from Arnold Bakers, Inc., Port Chester, N. Y.

"Bake-in" aluminum pan package contains six buns. Attractive 4-color lid printed by Lord Baltimore Press in Fidel-I-Tone fine screen lithography features a close-up photograph of buns with early American kitchen background.

Kitchen design serves as "family" symbol for Arnold, suggesting high quality, old-fashioned goodness.

Package lid is coated with lustrous Par-A-Glaze high gloss wax finish, also from Lord Baltimore Press.

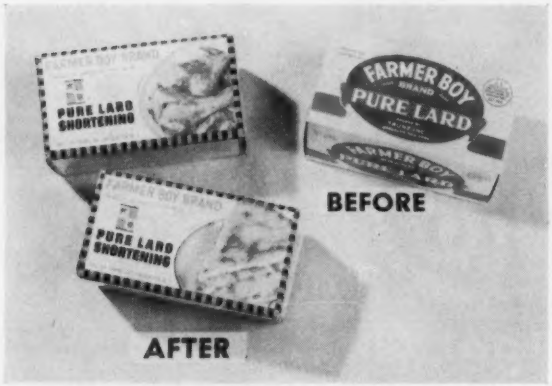
Circle 405 on Reader Service Card

Now—Glass and Aluminum Aerosols

New strides in aerosol packaging are marked with introduction of aluminum and glass containers.

Aluminums, from Bradley-Sun Div. of American Can Co. (406), are rust-free and have no side seams. Continuous decoration around body of lightweight can is possible, and new internal coating systems aid in food protection.

Gard Pressure Foods Corp., Northfield, Ill., is using a bonded-in-plastic glass dispenser for Taste Tap Spray O'Garlic (79¢). Product, applied as a mist-spray, is used to flavor meats. Target spray top assures positive spray pattern. Owens-Illinois supplies glass aerosols. (407).



Vignettes Spark Visual Appeal

Colorful illustrations of suggested uses keynote design changes in bright new cartons of Farmer Boy pure lard shortening, product of Trunz, Inc., Brooklyn, N. Y.

Three different vignettes of an apple pie, a gold cake, and fried chicken do a sparkling sales job. And a "Make Your Own Biscuit Mix" recipe on reverse side increases carton's merchandising appeal.

Lithographed in red, yellow, dark, and light blue by Milprint, new design of the 1-lb. carton was created by Milprint and Trunz personnel.

Design points up trend toward more and more in-use illustrations for creative housewives.

Circle 408 on Reader Service Card

Panels Provide 2-Way Display

National distribution of redesigned carton of Sunshine Toasted Wafers, featuring horizontal and vertical panels for alternating display, is now complete.

Package features a background of pure white with red and blue ovals spotlighting the product name and additional copy. Front panel has modern design, bolder visibility, and full size reproduction of wafers. Back panel displays two appetizing recipes for easy-to-make spreads.

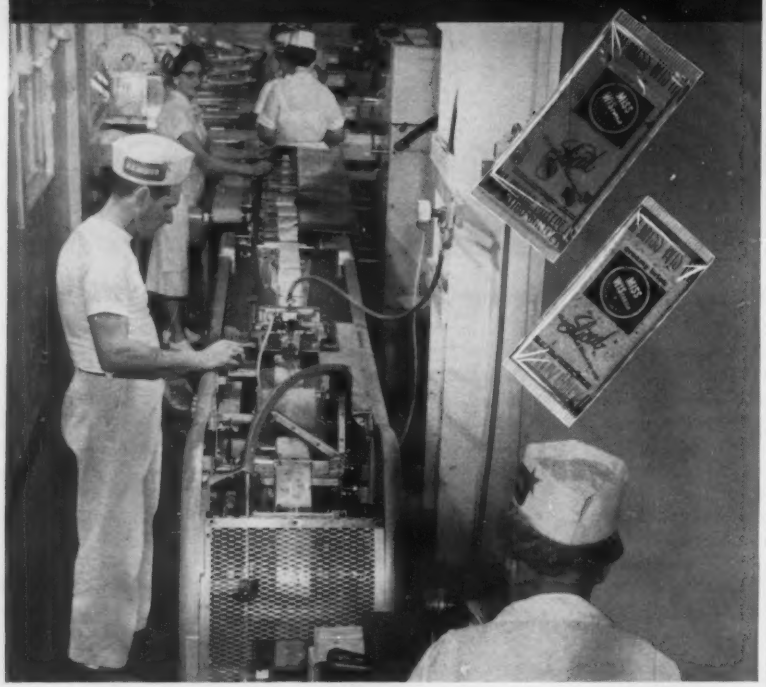
Initial sampling promotion supported by special displays brought strong sales response during New England testing period.

Alternating panels allow compact shelf-stacking with no loss of brand identity or visual impact.

PACKAGE AUTOMATICALLY WITH A *HAYSSEN RT!*

SAVE $250.00 A DAY

on packaging material costs alone.



Above: Typical installation of the Hayssen RT at the Monroe, Wisconsin plant of Armour Cheese. This newly installed machine packages sliced Munster, American and Swiss cheeses in six ounce packages directly from roll stock. The machine forms a hermetically sealed, gas-flushed package.

ONLY THE FULLY AUTOMATIC RT GIVES YOU THESE PACKAGING ECONOMIES —

• **LOWEST PACKAGING MATERIAL COSTS** – The RT forms its package from economical roll stock rather than the more costly preformed pouch used in most semi-automatic packaging lines. You save .5¢ per package on material costs, or over $250.00 on an average production rate of 50,000 packages per day. Add to this the labor savings realized when you change to a fully automatic system of packaging.

• **FASTER SIZE CHANGES** – The RT is the only automatic packaging machine which does not need change parts to change package sizes. Simple hand wheel adjustments for height and length, film change for width control package size.

• **BEST PACKAGE** – Store owners appreciate the space savings feature of the RT end-sealed package. Three of these superior packages can be displayed in the space normally required to display two of the older four-side seal packages.

See how the HAYSSEN RT can save you money — write for details today!

first in Automatic Packaging since 1910

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New Packages & Products

SUMMERTIME DESIGN for W. F. Schrafft's Summermints candies features pink lemonade and mint juleps. Eron & Eron created the image of "cool refreshment." (409)

New Product Shorts

Modilac, a modified milk formula adapted to the infant's digestive and nutritional needs, is receiving heavy advertising promotion by Gerber in attempt to capture share of present $35 million baby formula market.

Brigadoon, new candy bar from Luden's, Inc., Reading, Pa., is similar to firm's 5th Ave. product but butterscotch coating is claimed to allow an additional 10 deg. for hot weather sales.

Crab Gumbo is now available in frozen individual packages (Marathon) from Southern Belle Frozen Foods, Inc., Jacksonville, Fla.

Packaging Briefs

New Polyethylene Film from DuPont combines transparency of "high clarity" film with strength of more durable varieties, and has a special surface for good printing. (410)

Decorated Cans with textured finishes providing a new "look" plus an easier-to-grip surface have been introduced by American Can Co. (411)

Petrothene 218, new resin for producing cast polyethylene film, has been developed by U. S. Industrial Chemicals Co. High clarity and stiffness are features. (412)

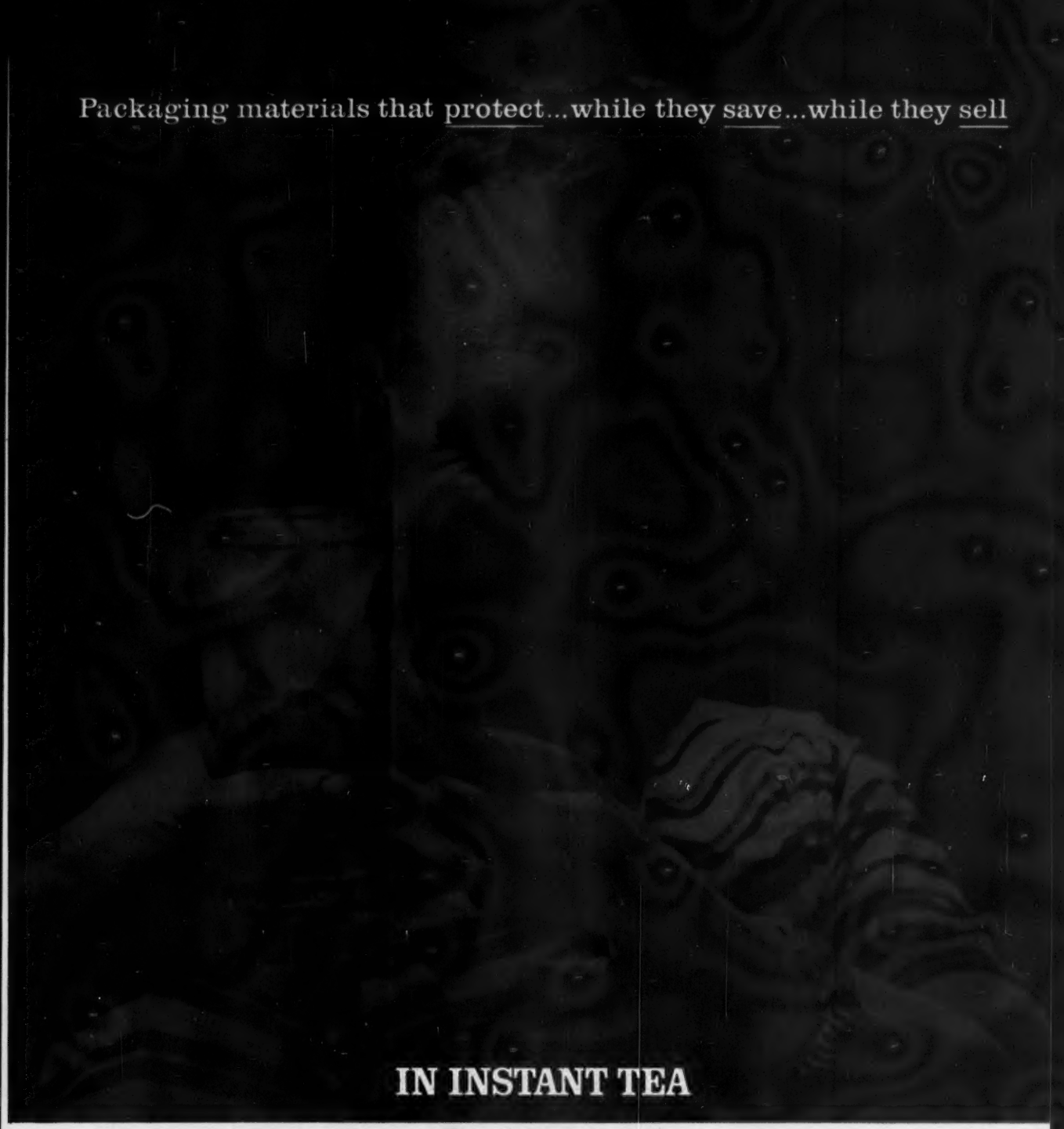
Two high density polyethylene formulations, first of a planned linear polyethylene series, is announced by The Dow Chemical Co. (413)

Beer Can with Aluminum Top for simplified opening is on market from Burger Brewing Co. Kaiser Aluminum supplies "E-Z Open Can." (414)

CIRCLE 28 ON READER SERVICE CARD

CIRCLE 29 ON READER SERVICE CARD →

Packaging materials that protect...while they save...while they sell

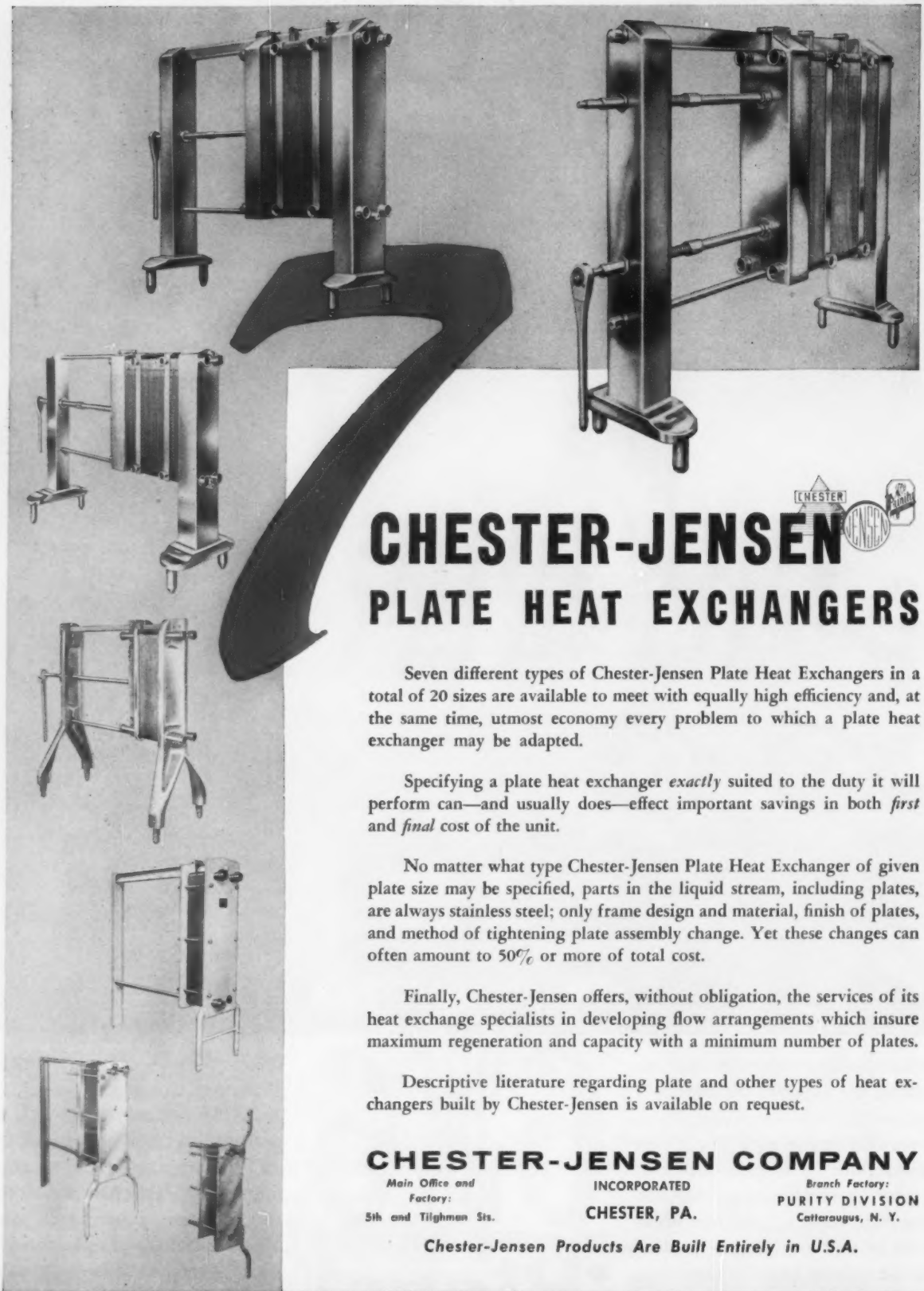


IN INSTANT TEA

All six leading instant tea marketers use Riegel packaging materials regularly. Here's the reason: Their personal experience has given them faith in Riegel's technical leadership and ability to make just the right paper . . . for new products as well as old. Sales leaders in *many* fields have the same confidence. Isn't this the *best* reason why you too should talk to Riegel next time?

6 OUT OF 6 BUY Riegel

You've a choice of more than 600 different Riegel materials . . . standard or tailor-made . . . to achieve just the right combination of product protection, machine efficiency and low cost packaging. Pouch papers, paperboards, glassines, foils, films . . . laminated in various combinations . . . plastic-coated or waxed . . . printed or plain. Write to Riegel Paper Corporation, 260 Madison Ave., N.Y. 16.



CHESTER-JENSEN
PLATE HEAT EXCHANGERS

Seven different types of Chester-Jensen Plate Heat Exchangers in a total of 20 sizes are available to meet with equally high efficiency and, at the same time, utmost economy every problem to which a plate heat exchanger may be adapted.

Specifying a plate heat exchanger *exactly* suited to the duty it will perform can—and usually does—effect important savings in both *first* and *final* cost of the unit.

No matter what type Chester-Jensen Plate Heat Exchanger of given plate size may be specified, parts in the liquid stream, including plates, are always stainless steel; only frame design and material, finish of plates, and method of tightening plate assembly change. Yet these changes can often amount to 50% or more of total cost.

Finally, Chester-Jensen offers, without obligation, the services of its heat exchange specialists in developing flow arrangements which insure maximum regeneration and capacity with a minimum number of plates.

Descriptive literature regarding plate and other types of heat exchangers built by Chester-Jensen is available on request.

CHESTER-JENSEN COMPANY

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Chester-Jensen Products Are Built Entirely in U.S.A.

Specialists in Stainless Steel Heating and Cooling Equipment and Tanks

Problems and Opportunities Challenge Industry

In the great and fast-changing food industry, opportunities were never greater. But those opportunities can be capitalized upon only through plans to meet today's challenges.

With the expenditures for food increasing at a rate of $3 billion annually, sales volume is assured for the industry as a whole. But the pace-setters will take the lion's share of new business.

The big challenge is to gear operations for top efficiency in marketing. Everything from research to packaging must be oriented to the total marketing concept.

Consider growing markets overseas

And marketing opportunities extend beyond domestic limits. With the steady increase in standards of living in other countries, the demand for convenience foods is rising. So also is the income with which to buy such items. Many of the larger food manufacturers are taking steps to cut a larger slice of this business.

Development of new products and packages, especially of the convenience variety, is a constant challenge. This accounts in large measure for the fast growth of manufactured foods. And much of the $100 million spent annually by the industry for research goes into the creation of new items.

Expenditures in this area are too low, nevertheless. Many industries spend a much higher percentage of their sales dollars for research. And they are competing with food manufacturers for the consumer dollar.

New processes constitute another challenge. Freeze-drying has caught the fancy of the industry because of its great promise. Costs are still too high except for specialty items. But with the widespread interest and increasing research, these costs likely will be lowered.

Another "hot" process, is freeze-concentration. One company is making capital of this through more flavorful citrus juices.

Go from batch to continuous processes

Continuous, automatic production of traditionally batch-made items will continue to spread. Swift's new method of forming and cooking frankfurters is a recent outstanding achievement in this direction.

Better instrumentation is an opportunity that can be capitalized upon to a much greater extent. And every company should establish a committee to evaluate opportunities for further automation.

Capital investment in more efficient equipment is increasing in the industry, and currently is at the billion dollar annual level. Yet it is still too low to put the industry at top-level efficiency in a reasonable period of time. Opportunities for payoff in this area call for a systematic analysis by company management.

Public relations to educate the consumer to the high quality and safety of manufactured foods is a major challenge. Legislation regulating the industry, particularly in respect to additives, is too often enacted on an emotional basis. And unless the trend is corrected it will become increasingly damaging to the industry, to agriculture, and to the public.

Challenges fall into two categories. One calls for individual firms to keep abreast of competition through progress. The other demands group action by associations to protect the industry. Alertness is a "must" in both areas.

Why are so many food processors specifying "Big Sam"?

Because "Big Sam" gives them *continuous* high capacity clarification . . . while protecting delicate flavors, true colors, nutritional values. "Big Sam's" sanitary design—stainless steel with smooth polished surfaces throughout hood, sludge discharge and all product contact areas—prevents contamination and "entrapment" of food particles. By replacing outmoded batch methods with fully automatic around-the-clock operation, they have cut costs, increased profits. Chances are "Big Sam" will do the same for you . . . ask for information on the WESTFALIA model SAMN-15037 Automatic De-Sludger.

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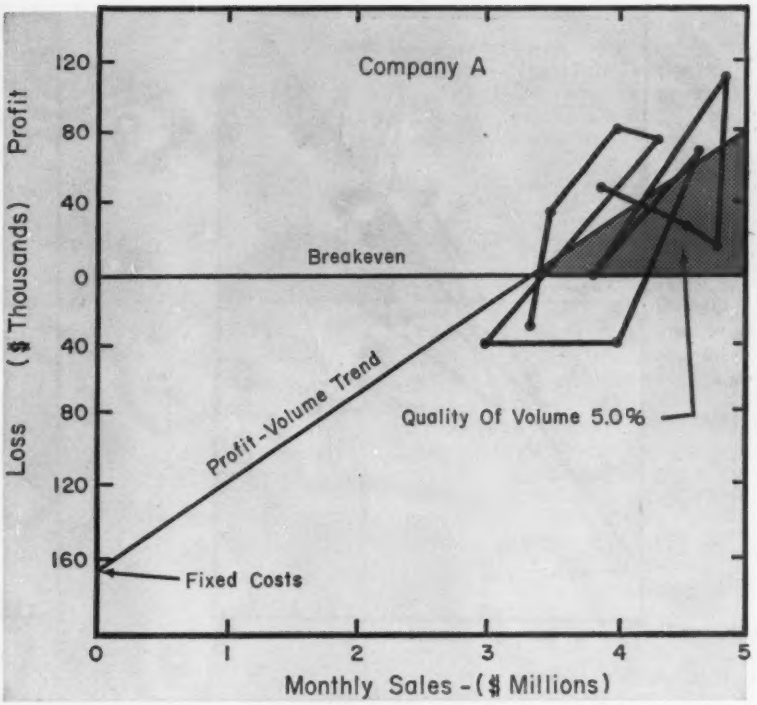
PROFIT - VOLUME Relationship for a food - making firm: Analysis, which plots monthly profit-and-loss figures over a full year, shows the fixed expenses that marginal income dollars had to absorb before they began generating profits.



R_x For Bigger Profits:

FOOD ENGINEERING

Quality Control of Sales

Here's a top-flight consultant's handy formula that shows you how to focus on the "quality" volume that brings the biggest returns. . . . Included is case history of food firm that used method to quadruple its net

TOP QUALITY of product is so vital to food company success that every manufacturing and physical handling function is geared to that objective. Yet, food firms often overlook a cure to their low-profit problem by failing to give as much attention to the "quality" of their sales volume.

Because volume is basically a *quantitative* term, it takes some adjustment to realize that there's a *qualitative side involved.* What this means is that some sales dollars (or volume) are worth a great deal to you, some have little or no value, and some may actually weaken your profit-making chances.

DOUGLAS P. GOULD
Vice President, Trundle Consultants, Cleveland 15, O.

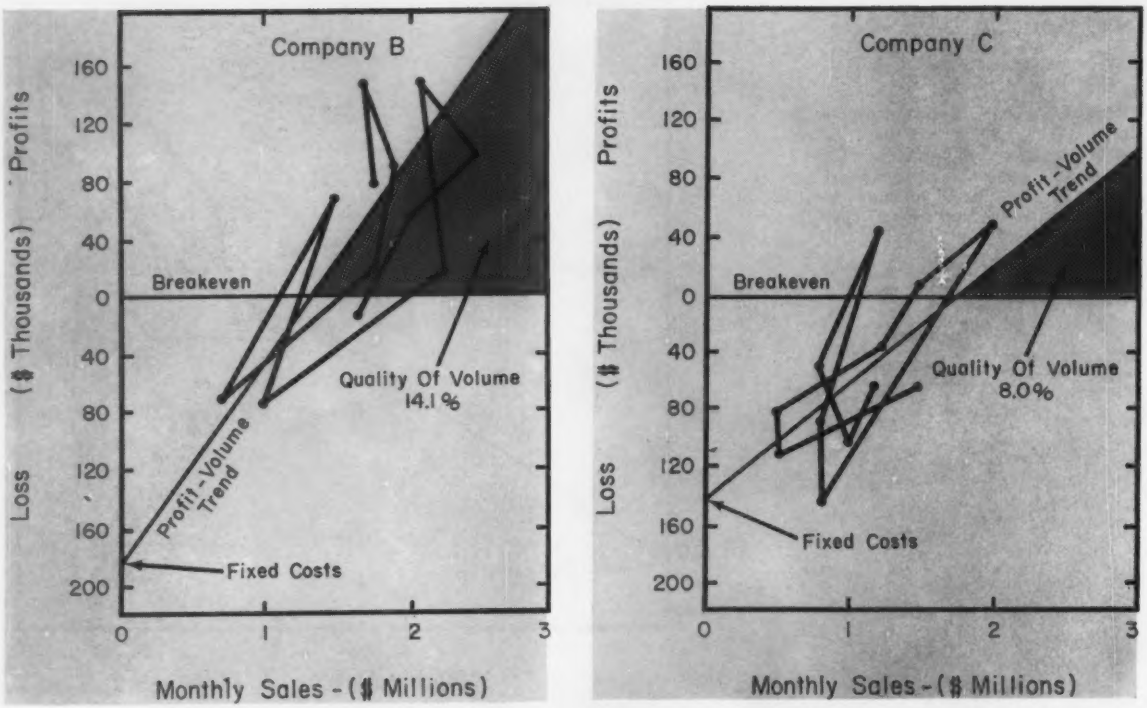
New Day Dawns

How can you be sure of getting the right profit-building kind of new business? By using the technique described in this article that measures "quality of volume" in a straight-forward, logical, and factual manner. Designed to provide basic decision information to management, the method is called the "marginal income technique" or the "common language of profit contribution."

Using this approach, you can say with confidence "A sales dollar of this product sold through this market and this distribution channel contributes 10¢ to paying fixed expenses and profit. I can sell $1,000,000 in this way and have $100,000 profit contribution.

"On the other hand, if I sell this same product through this second channel, I'll get $1,500,000 in sales. However, while my fixed expenses won't change much under the price and cost conditions prevailing there, I'll end up with only 5¢ out of each dollar to pay fixed costs and for profit. Thus, while volume is substantially increased, the profit contribution will be a smaller $75,000."

How many times have you heard these statements—"This product gives us a 5% profit," or "We make 2% on that account." Implication here is that every sales dol-



VARIATION of marginal income rate between food companies, shown here, makes it imperative for each company to know its own "quality of volume" rate.

lar of that product produces 5% profit.

Obviously, the first sales dollar doesn't produce that profit, nor the second or third one. In fact, no profit is produced until a certain volume level (breakeven point) is reached. The sales dollars may contain something that will eventually produce the anticipated profit, but the 5% profit is earned at only one sales volume figure.

For proof of why quality of volume is so important, look at the profit-and-volume histories of three typical food companies (see charts p. 33-4). In each case, 12-mos. profit-and-loss figures are plotted against the sales volume figures for the same month and a trend line drawn through the scattered points.

Obviously, there is some relationship between profits and volume, though it is different in each of the three cases. The "zero line" drawn across each chart is the volume level (breakeven point), below which profits aren't earned.

A large loss is incurred at zero sales, no profit or loss occurs at the breakeven point, but earnings build up at a fairly predictable rate above the breakeven. In each of the cases shown, the 5%, say, on sales wasn't earned until well beyond the breakeven point.

You'll also note that the loss turns into a profit following a fairly predictable trend in volume increase. The rate appears fairly constant over a wide range of volume.

We can say that the loss is swallowed up by something in each sales dollar. The loss incurred below the breakeven point is due to those operating costs which are fixed, regardless of the volume of business that is done. These fixed charges have to be paid from the sales dollars produced.

The sales volume, however, must first pay certain out-of-pocket or variable costs which are the result of making the unit of product they represent. These are material expenses, including basic commodities, direct labor, sales commissions, and fluctuating overhead items which increase with production or sales.

Spelling It Out

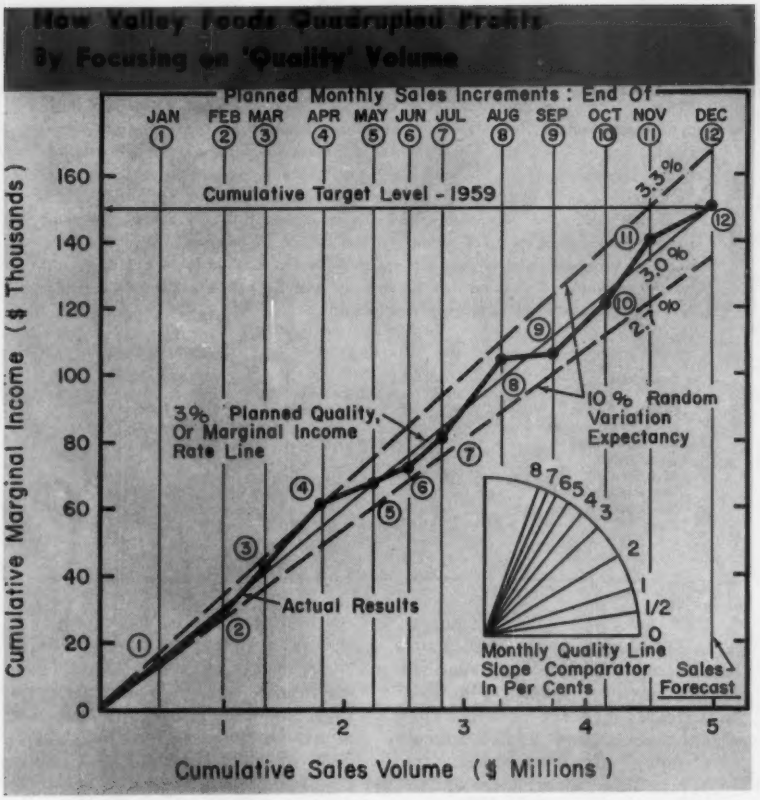
Here's a typical case that shows what's involved: If you sell a product for $1.00, and the variable costs come to 90¢, you have 10¢ left for your fixed costs—such as the plant, rent, depreciation, some advertising, and executive salaries. When these expenses are paid or absorbed at the rate of 10¢ out of *each* sales dollar in this case, you are then able to break even.

Above that volume level, the 10¢ is profit. All expenses, both fixed and variable, have been paid, and the 10¢, called marginal income (the difference between sales price and variable costs), is available for profit. Marginal income (or MI) can also be expressed as a percentage of the selling price.

The profit-volume histories shown for the three food companies indicates that this is the way profits originate. The degree of earnings in each case was the result of the quality of sales volume—MI rate—and the amount of fixed expenses that the marginal income dollars had to absorb before they produced profits.

This analysis underscores two key food industry trends: (1) Quality of volume of several producers is different, i. e., they have a different MI, but a certain similarity of level seems to exist between particular companies. (2) Large differences in fixed costs are apparent.

What this boils down to so far


How Valley Foods Quadrupled Profits By Focusing on 'Quality' Volume
Planned Monthly Sales Increments : End Of
JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
Cumulative Target Level - 1959
3.3%
3.0%
2.7%
3% Planned Quality, Or Marginal Income Rate Line
10% Random Variation Expectancy
Actual Results
Monthly Quality Line Slope Comparator In Per Cents
Sales Forecast
Cumulative Marginal Income ($ Thousands)
Cumulative Sales Volume ($ Millions)

The Problem:

When $9 million in sales produced only $5,000 in pre-tax net, Valley decided to screen its diverse product line for weak sisters. A detailed analysis of product profit contribution rates showed that puddings trailed the other categories—cakes, pies, rolls, biscuits, and turnovers—despite the fact their volume was 2nd highest in the line. Here's the way the product groups stacked up:

Product Class	Quality of Volume Rate	Volume Forecast	MI Dollars Produced At Forecast	Product Generated Fixed Costs	Value of Volume
Cakes	5%	$1,000,000	$ 50,000	$ 40,000	$ 10,000
Pies	3	5,000,000	150,000	50,000	100,000
Rolls	12	500,000	60,000	10,000	50,000
Biscuits	7	500,000	35,000	30,000	5,000
Puddings	2	1,500,000	30,000	45,000	−15,000
Turnovers	20	500,000	100,000	40,000	60,000
		$9,000,000	$425,000	$215,000	$210,000

The Solution:

Guided by this information, Valley eliminated puddings from the line. This move slashed total fixed costs from $420,000 down to $375,000 and raised pre-tax profits from $5,000 to $20,000. Here's how:

	BEFORE	AFTER
Sales forecast	$9,000,000	$7,500,000
MI Dollars produced	425,000	395,000
Product-Generated Fixed Costs	215,000	170,000
Common Fixed Costs	205,000	205,000
Total Fixed Costs	420,000	375,000
Pre-Tax Profit	5,000	20,000

As a final step, Valley set up a quality control sales chart (see illustration) for each product group. This enabled the company to measure monthly performance against objectives, and to speedily spot variations from targeted goals. This chart was even carried further with supplementary ones maintained for key customers, such as large chain store groups, to make sure that special services, promotions, and price adjustments didn't hurt the company's profit plan.

as your own operation is concerned can be put thusly: Effective short- and long-range profit plans must carefully consider the quality level of your company's volume. Quality control of sales starts with the basic profit plan.

Focusing In Close

Here's a case-history of an actual food firm—with the disguised name Valley Products—which used the MI approach to quadruple its profits. The company was faced with three alternatives to its earnings problem:

A) Sell more at the same quality of volume (MI rate).

B) Improve the volume quality by altering the product mix, increasing the selling price, or reducing variable costs in relation to sales price.

C) Reduce fixed costs. In the food industry, cutting $1.00 off of fixed expenses may reduce the breakeven point as much as $75 to $100.

During the course of evaluating the three proposals, Valley carefully measured both the quality and value of volume. Value includes a consideration of a volume's quality, quantity, and direct fixed expenses. That's because it's possible to create a marketing situation where the volume quality (MI rate) or quantity can be increased, but the added costs can't be offset by the greater volume.

A detailed analysis of Valley's product profit contribution rates showed 4.72% to be the overall quality level for all products in the line. This rate was obtained from a product group analysis (illustrated in box at left).

How It Was Done

Valley's fixed costs totaled $420,000—of which $215,000 were due to a particular product class (puddings) being kept in the line. The remaining $205,000 were common fixed expenses, meaning they couldn't be charged to any single product class, hence had to be absorbed by the marginal income dollars of the complete line.

Net result, after all fixed costs were met, was a profit of $5,000 on $9,000,000 of sales—admittedly, not a very satisfactory return.

Further examination showed that the puddings, despite the fact they were the company's second largest seller, had the lowest qual-

ity of volume rate. By eliminating this product class, Valley upped its pre-tax profits from $5,000 to $20,000 and increased its overall volume quality from 4.72% to 5.27%.

Further examination of the MI rate of each product class showed where additional selling effort and promotion would pay off. For example, in the case of pies, where quality of volume was 3%, $100 of sales pulled in $3 of marginal income. But turnovers, whose quality of volume was about 7 times greater, produced $20 of marginal income for every $100 of sales.

Next, certain other changes in fixed and variable costs were made to bring the profit plan more in line with earnings needs. Also, shifts in product emphasis and marketing methods helped improve overall quality of volume, although total sales remained close to the forecast level.

To check performance against objectives, a quality control chart for volume was begun (see illustration). Month-by-month sales figures were plotted on a horizontal bar for quick spotting of variations from plan. Changes in the quality rate are quickly noted by checking the slope of the "actual" line for each month against the comparator.

Each month, the cumulative MI result is plotted against cumulative sales on the permitted range chart. Similar controls on fixed costs insure that the value of volume is held at planned levels.

In addition, secondary quality control charts are maintained for key customers, such as large chain store groups. This helps identify those additional service and promotion costs, or price concessions on private labels, that can hurt a company's profit plan.

Why Keep Charts?

What are the benefits you can expect to get from such quality control charts? For one thing, you get a continuous, quick, and accurate scan of the quality level of important customers, and their importance to your profit goals.

Also, the new information aids timing of your market strategy. Availability of extra marginal income for special promotions can be quickly determined.

Fixed expense levels will remain realistic over a range of volume normally plus or minus 20% of the planned target—a variation which represents usual fluctuations for the time-span involved in most profit planning. These costs are set over a range of operations and aren't merely "shut-down" fixed expenses.

Certain characteristics of the food industry—such as the predominance of low quality volume in the 1% to 12% or 15% range—makes the kind of knowledge turned up by these charts vital to corporate success. Except for certain specialties, a great deal of low quality volume is usually needed to offset what may be relatively high fixed costs or pay even a modest profit.

Key Factors

Basically, these industry characteristics are:

► Large volume gains required for profit improvement.

► Fixed expense additions or reductions have a disproportionate effect on breakeven and profits—hence, there's a premium on this type of saving.

► Substantial percentage declines in volume can occur without excessively jeopardizing the profit structure.

► Small declines in quality of volume (MI rate) may make it impossible to earn a profit at present plant capacity.

► Even a small increase in MI can have an important effect, percentage-wise, on profits.

► Price concessions, freight absorption, etc., can quickly wipe out all marginal income.

One area where knowledge of these traits is vital to decision-making is that of brand advertising. In some critical industry segments where variable costs eat up 98% of the sales dollar (leaving 2% for MI), one dollar spent on advertising must produce a minimum of $50 in sales to reach the breakeven point on the advertising cost itself.

Typical cases in the food industry approximate a 1 to 12 relationship—i. e., 12 sales dollars needed to absorb a dollar of fixed costs. This compares unfavorably with some other industries, such as drugs and electronics, where a dollar laid out for advertising must generate only $2 to break even.

This critical difference in payout possibilities doesn't get enough attention when food companies weigh future promotion plans. Some firms have increased ad budgets to the point where sales volume is doubled, but the quality of the new business didn't pay for the fixed cost of the advertising, let alone make any contribution to other fixed expenses or profit-making.

Even as in the production function, sales quality tends to deteriorate if you don't have (1) good measuring standards, (2) realistic appraisal techniques, and (3) a continuing interest in the problem. Profit planning and marginal income analysis give you a workable, practical answer to those three basic problems. (End)

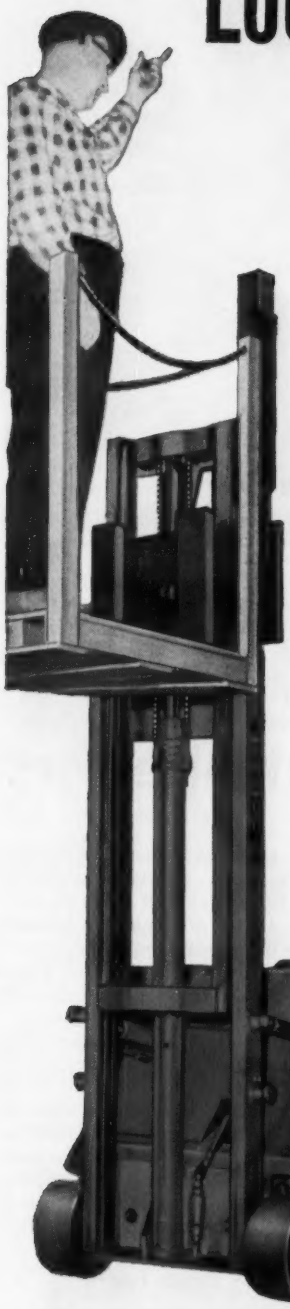
Where To Allocate Your Costs

When it comes to budgeting your expenses, be sure to put each item in its proper classification. Roughly, there are three classifications of expenses—fixed, variable, and semi-variable. Fixed charges are those which remain the same despite changes in volume. Variable ones vary with shifts in volume of production or sales. And the semi-variable costs combine elements of fixed and variable expenses and do not reduce to zero when activity is at a standstill. Of course, the exact classification depends to some extent on the individual company. And the exact amount of expense which is fixed or variable, in the semi-variable category, also depends primarily on the individual company and its policies. Here is a handy guide you can use when allocating your costs:

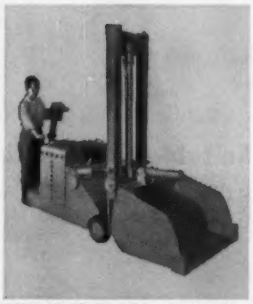
FIXED	VARIABLE	SEMI-VARIABLE
Depreciation	Direct Labor	Manufacturing Burden
Rent	Direct Material & Ingredients	Indirect Labor
Executive Salaries	Commissions or Brokerage Fees	Light & Power
Basic Clerical Salaries	Factory Supplies	Entertainment
Key Supervision Salaries	Cooperative Advertising	Warehousing
Sales Salaries	Freight	
Advertising	Packaging	
Guards & Watchmen		
Most Insurance		
Taxes		

Look at all these things a *Transporter* can do!

Here are 8 cost-cutting ways Automatic's Standard Attachments can turn Transporters into Specialists

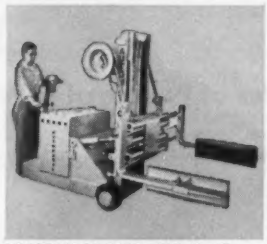


These specially designed standard attachments can add job flexibility to your Transporter Stacker. Now, a variety of jobs can be performed at considerable cost savings.

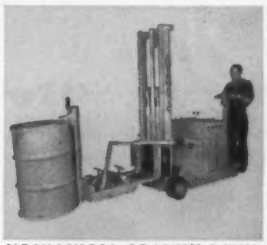


HYDRAULIC SCOOP...for handling loose materials can be furnished as a removable attachment.

REMOTE CONTROL MAST permits operator to ride up and down for order picking or maintenance work by pushing button on carriage. Platform folds back to permit normal use of forks.

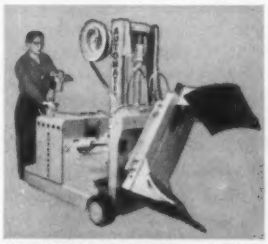


UTILITY CLAMPING DEVICE...Clamp arms can be attached to forks for handling cartons, etc. Clamp arms can be removed to handle pallets.



MECHANICAL GRAVITY DRUM DUMPER...Removable attachment to fit on forks.

GOOSENECK CRANE ATTACHMENT...for items too bulky or too irregular in shape to be palletized.



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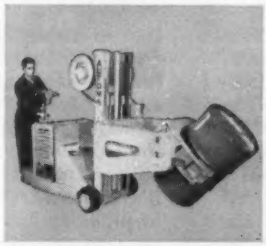

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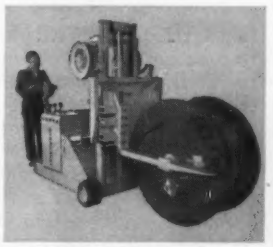

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45 Varieties of Packaged Foods Suitable for Stocking Shelters

You may readily identify your own company's class of product in this graphic display of most-feasible survival supplies. See article for further details on specific foods required and types of packages best suited for survival during radiation fallout.

Straight Facts on—

Foodstocks for Fall-Out Shelters

Selection and storage of survival foods pose a host of urgent questions. Here are common-sense answers revealing just where we stand today and targeting R&D needed for tomorrow

IF THE DISASTER of nuclear war actually brackets our nation, the civil population will be forced to seek refuge from fall-out. Thus, there's prime attention to the question of fall-out shelters—the one civilian development that we pray will never pay off.

Simple logic established their purpose. With international conditions unsettled, and with Russia armed with fission and fusion weapons, it's apparent many cities could become prime targets.

In this country, the decision to build shelters is just the beginning. And it's brought with it a host of special problems.

Here, the matter of food supply is very complex. Hence, there is extensive study relative to selection of foods for shelter storage. Basically, there must be sufficient food for anticipated occupants to survive for a 2-week period.

Water supply, too, may be one of the tougher problems—thus far only partially solved. Although it's indicated that water currently in pipes or hot-water tanks would be safe at first, we must assume that the city water supply is vulnerable. Well water might be used. Extra water could be stored in convenient containers and replaced periodically.

In a period of dire emergency, it's figured that supplies of water in hermetically sealed cans would be needed. Minimum requirements would be 2 gal. per person daily for 14 days.

Should a nuclear holocaust occur, food and drink must be provided not only to furnish body energy but also to relax nerves, divert attention from fears and worries, and assure communal spirit. Elimination of fears of hunger or thirst will go far toward alleviating other troubles.

Relative to the key food problem, it was startling to learn that no one—in or out of government—had all the answers to questions about foods for shelters. So, at the request of the Office of Civil & Defense Mobilization (Battle Creek, Mich.), there has been prepared a sizable report (328 pages) on current published and unpublished information relative to storage life of foods.

Pinpointing Prime Factors

In selecting foods for shelter storage, these basic factors (in approximate order of importance) were considered:

. . . **Palatability:** It's essential that the foods be accepted and relished by both sexes of different ages, physical condition, and emotional stress.

. . . **Nutritional value:** While energy and hunger satisfaction are of prime importance, the diet must be well balanced in proteins,

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Georgia Experimental Station, University of Georgia, Experiment, Ga.

fats, carbohydrates, vitamins, and minerals. Normal nutrition is desired for shelter occupants for a minimum of 2 weeks (at which time it's figured they can "come up for air").

. . . **Availability and economy:** Generally, familiar foods usually consumed should be stored in shelters. Should disaster occur, the change from normal eating habits to stored foods is thus made as simple as possible. It's recommended that specialties be used only for diet variety.

. . . **Long shelf-life:** Other conditions being equal, preference should be for foods with longest shelf life. Some items can be stored indefinitely, others for 1, 3, 5, or 10 yr.

. . . **Ease of preparation and serving:** Accented as far as possible are one-dish meals that can be directly served from containers. Such meals include soups, stews, hash, and meat-vegetable mixes, accompanied with fruits, fruit juices, vegetables, vegetable juice, and milk (to complete the meal).

. . . **Minimum waste:** Preferred are foods that are completely edible in disposable containers which, when empty, are light, compressible, and hazard-free.

. . . **Pleasant odor:** In confined areas, a food's odor may determine its use. Other factors being equal, foods with the most pleasant aromas should be selected. In some cases, appetite-stimulating odors might be considered.

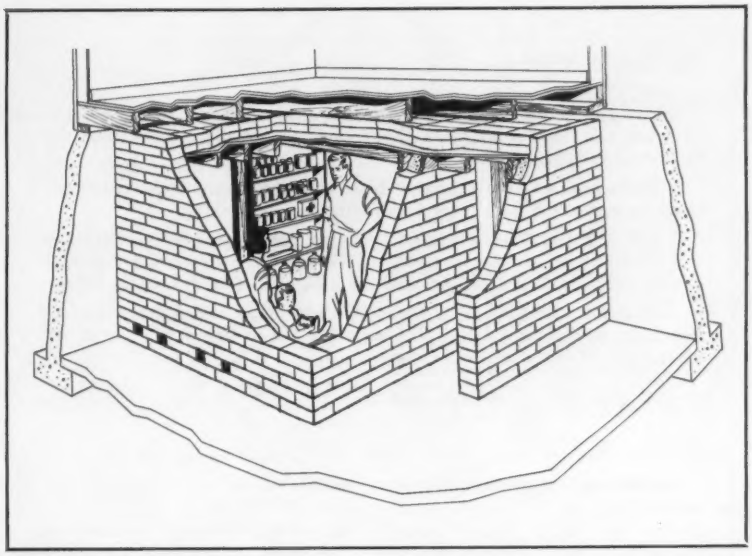
. . . **Texture:** Aim would be to balance milk, soups, and juices with a reasonable amount of "chewy" foods to augment satisfaction and variety.

Storage Aspects

Foods in this study fall into the three categories detailed below. All can be safely held for 2 yr. in 70F. shelters, and those indicated by asterisks can last for 5 yr. or longer.

1. Unprocessed foods. These have been graded, cleaned, dried, and packaged (but not treated for control of insects or micro organisms). They require such preparation as soaking, cooking, and seasoning (thus inclusion of kitchen-type equipment is entailed.) They're economical, nutritious, generally available, and acceptable. Among these items are barley, beans, shelled corn*, peas, rice*, walnuts (black, unshelled), and wheat.

2. Processed foods requiring cooking in moisture-proof, vapor-proof packages to maintain moisture at specific levels. They've been cleaned, graded, partially processed, seasoned, and partially cooked (by choice). They've been moisture-adjusted and treated against insects (but contain microorganisms). List comprises bakery mixes (cake, quick, and yeast breads), cereal products (oats, barley, wheat), white flour*, corn and soya meal, and wheat base.



FAMILY SHELTERS like this may be sole refuge in case of thermo-nuclear attack. But with the danger of exposure to radiation, a minimum 2-wk. supply of food and water is equally important for survival.

3. Processed foods needing little or no cooking. Many of these are suitable for direct consumption from disposable packages. They cover a wide selection of canned bakery items, meats, fruits, vegetables, beverages, desserts, and confections. Likely desirable, too, are condensed or dehydrated foods (particularly beverages and vegetables) that call for rehydration, seasoning, and heating.

Broken down, this category comprises:

. . . **Bakery products** (vacuum canned): Biscuits (army, 100-hr. shortening and milk, and hydrogenated shortening); breads (white and chocolate nut); cakes (pound, pudding, fruit, and steamed fruit); sandwich cookies; and salted soda crackers.

. . . **Beverages:** Beverage bases (synthetic fruit flavors in moisture-proof, vapor-proof packages); chocolate beverage syrup (canned or bottled); cocoa beverage powder (in moisture-proof, vapor-proof packages); coffee (ground, roasted, and in vacuum-packed jars or cans); soluble coffee (in moisture-proof, vapor-proof packages); soluble tea (in similar packages); water* (vacuum canned); and wine* (bottled).

. . . **Ready-to-eat cereals:** Bars or bulk (in moisture-proof, vapor-proof packages).

. . . **Dried condiments in moisture-proof, vapor-proof packages:** Horseradish, herbs, MSG*, salt* (table and garlic), and spices.

. . . **Confections in moisture-proof, vapor-proof packages:** Candy (hard, starch jelly); sweet chocolate, gum (candy coated and chewing); roasted Macadamia nuts.

. . . **Dessert mixes in moisture-proof, vapor-proof packages:** Sweetened prepared coconut, ice cream mix (dried and canned), plain gelatin, meringue powder, starch-base puddings.

. . . **Eggs, glucose-free, dehydrated and canned:** Albumen*, whole and yolks.

. . . **Milk and milk products in cans, jars, or moisture-proof, vapor-proof packages (dried milk and cream gas-packed):** Blended dried butter, cheese (dried baker's* and processed), cream (dried coffee-type) and milk (sweetened condensed*, evaporated, dried nonfat, dried whole, whole sterilized, by Winger process*).

. . . **Sandwich spreads (in cans or jars):** Caviar, cheese, peanut butter, and jam (apricot, grape, peach, pineapple).

To Begin With—

Key checks have now demonstrated that we have broad varieties of foods suitable for use in fall-out shelters—survival foods that can be stored for long periods.

These products are available from commercial channels, from military procurement, and from home supplies.

Out of some 2,000 different types of packaged food products, at least 162 can be satisfactorily stored (70F.) for 2 to 3 yr. Another 48 can be kept 3 to 5 yr., and an additional 27 can be held 5 yr. or longer.

Of those with 2 to 3-yr. life, 7 are non-processed, 8 are processed but require cooking, and 147 (including 57 in dried or dehydrated classes) need little or no cooking.

. . . Sauces and dressings (glass-packed): Catsup, chili, hot, meat, prepared mustard, soy, and Worcestershire.

. . . Starchy foods in moisture-proof, vapor-proof packages: Corn starch, macaroni products, noodles, and tapioca.

. . . Soups in canned or moisture-proof, vapor-proof packages: Dehydrated (chicken noodle, cream of potato, green pea, onion, and tomato - vegetable); dehydrated precooked (cream of onion, cream of potato, green pea); ready-to-serve; soup and gravy base.

. . . Vegetables and juices (canned, except high-acid products): Dehydrated (green beans, cabbage, carrots, sweet corn, onions, peas, peppers, potatoes*, tomato juice powder); pickles; relishes; potato chips and sticks.

. . . Miscellaneous items in moisture-proof, vapor-proof packages: Baking powder*, baking soda*, cigarettes, dehydrated honey, sugar (granulated, confectioner's), cider vinegar, yeast, and mineral food*.

Packaging Points

Foods' shelter life is greatly influenced by kind and manner of packaging. A package's various protective functions are in point. Generally, "life" of a package is similar to that of the products. And as products are improved, new qualities are "built-in" the package.

Commonly, the "built-in" storage life a package provides is slightly longer than that of the food content (usually less than 2 yr. during shelter-storage conditions). For longer periods, packages are needed with greater resistance to moisture, temperature, and oxidation. Such packages include sealed cans (aluminum and tin-coated steel plate), bottles, jars, and laminated materials.

Here's a break-down on packages:

1. Tin cans: Factors here are availability in a variety of sizes, economy, low damage rate, long storage life, ready handling in live production. For many products, cans must be furnished with special interior coatings. And, to prevent corrosion, outside coatings are also required.

2. Glass containers: They're excellent for preserving foods, are corrosion resistant, etc. Container shapes and sizes are less standardized. But they should be employed only to a limited extent for shelter storage due to breakage hazards. Coated closures must be used—to resist acids from within, moisture from without.

3. Flexible packages: Laminated-type flexibles are constantly being improved, and they are very widely applicable and most suitable for shelter-storing of foods—especially for dehydrated or compressed foods.

They're non-breakable, highly resistant to corrosion, available in any desired size, and easily disposable when emptied.

However, some flexibles, when subjected to extreme temperatures, become brittle, dilate, or warp. As a result, product protection is reduced. Some may be good for 5 yr. at 100F.

Satisfactory pouches for insert gas- or vac-packaging are available in such combinations as Mylar-aluminum foil-vinyl, Mylar-aluminum foil-Saran, or paper-polyethylene-aluminum foil-polyethylene. Mylar is used as an outer durable film. Foil supplies the barrier against moisture and oxygen. Saran, polyethylene, and vinyl offer heat-sealing properties.

Flexibles must be resistant to grease diffusion from within and grease contamination from without. Those used for fatty products should be treated with such antioxidants as BHA, BHT, or NDGA. These antioxidants may be incorporated into paperboard (during manufacture) or coated on inner surfaces of flexible materials.

4. Plastic packages: While polyethylene, polystyrene, and vinyl containers aren't suitable for heat-processing, they're advantageous for special purposes. They can be pressurized or vacuumized; are cheaper than tin, glass, or aluminum; don't break, dent, rust, or leak. They're highly resistant to acids, alkalis, and foreign odors. They are available in many sizes, shapes, and colors. Further, they can be stored 1 to 5 yr., also can be reused.

5. Fiber drums: Recently, there's been a growing demand for fiber drums. They're normally straight- or convolute - wound, rather than spiral-wound. Tough and strong, they're widely used for packing dry or liquid products. They're available in any size, as well as lined with wax, foil, or polyethylene (moisture-proofing). They're well suited for large shelters because of their rigidity, resistance to moisture and breakage, and general adaptability for handling and storing.

Temperature and RH: Most important variable concerned with food storage is temperature, then relative humidity.

Benefits of low temperatures are well recognized, whereas high temperatures incur chemical changes altering flavor, color, texture, and nutritive value of processed foods. Rate of these latter changes doubles with each 18F. rise above 32F., climbing progressively from 2 times at 50F. to 32 times at 122F.

There are the temperature factors bearing on microbiological activity . . . internal can and metal lid corrosion . . . end-products of corrosive action . . . and insect control (especially relative to stored grains, nuts, flours, dried fruits, etc.).

Parallel ranging applies for humidity. Storing of nuts, grains, and dried fruits at 60% RH or lower will curb mold growth. At higher humidities, raisins and figs gain weight, become sugared. On the other hand, shelf-life of dried products and dry mixes is tripled by cutting moisture content to one-third.

Question of providing refrigerated food-storage in shelters is weighed on specific factors of cost versus feasibility and advantage. In any event, however, it's recommended that foods be kept in a chill range (no higher than 48F.) for as much of the storage period as possible.

Nutrition & Palatability: The rate of adverse changes in palatability, vitamins, fats, proteins, and carbohydrates of stored foods is influenced by such factors as nature of the specific product, its moisture content and pH, stability of each vitamin, type of packaging, and condition of storage (time and temperature).

Levels of riboflavin, niacin, and vitamins D and E may be little affected. But gradual losses of thiamin and vitamin A are sustained, and vitamin C may be seriously depleted, particularly in fruits. Low-temperature storage serves best toward maintaining the various values.

Infestation: Safeguarding of shelter foods from insects and rodents is a "must." Four points of control are: (1) Use of protective packages; (2) maintenance of 48F.-or-lower storage temperatures; (3) trap and bait routines; and (4) possible irradiating of foods, containers, and certain equipment.

There is, of course, the fact that specific pests demand specific controls. Relative to insects, for example, special insecticidal dusting or coating measures are indicated against boring-type insects that can penetrate outer surfaces and closures of flexible packages.

Unlike insects, rodents are active over a wide range of temperature, and they may be destructive even at 0 deg. F. Five control points are: (1) Use of close-weave wire-mesh storage bins; (2) metal, glass, and other rodent-proof packages; (3) cleanliness and orderliness (elimination of harborages); (4) "run-in" type traps; and (5) special poisons spotted in selected areas.

View Ahead

Before an entirely satisfactory food-shelter storage program can be realized, there's need for additional studies.

A search should be made for a wider variety of convenience foods. These should cover "heat-and-eat" canned foods; "chill-and-serve" juices, fruits, salads, and desserts; "add-water-only" dehydrated items, as milk and milk products; and "eat-from-the-package" confectionery-type foods.

Such products are ideally suited for shelters, since they require little or no cooking or seasoning. In addition to the benefit of minimum preparation, there are no left-overs.

Then, too, more one-dish meals should prove highly acceptable, provided they're supplied with minimum daily requirements of fats, proteins, carbohydrates, vitamins, and minerals.

Furthermore, a special study should be conducted on methods for preparing and serving foods in various-size shelters. Spotlight here would be on best procedures for opening containers, disposing empty ones, preparing and serving foods, removing garbage and left-overs, and handling special dietary problems.

Finally, there should be additional research on development of better flexible packages, rustproof cans, rigid aluminum containers, and master-type containers for food storage.

The above article is published with the approval of the Office of Civil & Defense Mobilization, Battle Creek, Mich.

Guide for Shelter Reserve Food Supply

KIND OF FOOD	NEED PER PERSON		REMARKS
	Daily	*2 weeks*	
1. Milk	Equivalent of 2 glasses (fluid)	Equivalent of 7 qts. (fluid)	Each of the following is about the equivalent of one quart of fluid milk: Three 6-oz. cans of evaporated milk. One 14½ oz. can of evaporated milk. Three to 3½ ozs. of nonfat dry milk.
2. Canned meat, poultry, fish, dry beans, and peas	2 servings	28 servings (about 8 to 9 lbs.)	Amounts required for one serving of each food are as follows: Canned meat, poultry, fish—2 to 3 ozs. Canned mixtures of meat, poultry, or fish with vegetables, rice, macaroni, spaghetti, noodles, or dry beans—8 ozs. Thick soups containing meat, poultry, fish, or dry beans or peas—one-half of a 10½-oz. can (condensed).
3. Fruits and vegetables	3 to 4 servings	42 to 56 servings (about 21 lbs. canned)	Amounts required for one serving of each food are as follows: Canned juices—4 to 6 ozs., single strength. Canned fruit and vegetables—4 ozs. Dried fruit—1½ ozs.
4. Cereals and baked goods	3 to 4 servings	42 to 56 servings (about 5 to 7 lbs.)	Amounts required for one serving of each food are as follows (selection depends on extent of cooking possible): Cereal: Ready-to-eat, puffed—½ oz. Ready-to-eat, flaked—¾ oz. Other ready-to-eat and uncooked—1 oz. Crackers, cookies—1 oz. Canned bread, steamed puddings, and cake—1 to 2 ozs. Flour, flour mixes—1 oz. Macaroni, spaghetti, noodles: Dry—¾ oz. Cooked, canned—6 ozs.
5. Spreads for bread and crackers	According to family practices		Examples: Cheese spreads. Peanut and other nut butters. Jam, jelly, marmalade, preserves. Sirup, honey. Apple and other fruit butters. Relish, catsup, mustard.
6. Hydrogenated fats and vegetable oils		Up to 1 lb. or 1 pt.	Amount needed depends upon extent of cooking possible.
7. Sugars, candy, nuts, instant puddings		1 to 2 lbs.	
8. Miscellaneous	According to family practices		Examples (amount needed depends on extent of cooking possible): Coffee, tea, cocoa. Instant, dry cream substitute. Bouillon products. Synthetic beverage products. Salt and spices (e.g., pepper). Flavoring extracts, vinegar. Soda, baking powder.
9. Water	½ gal.	7 gals.	

DAILY AND TWO-WEEK NEEDS for one adult are listed here. Teenagers may need as much or more, and younger children may need less than amounts given in guide. Foods in cans should be rotated at least once or twice a year, and foods in cartons at least every 3 mo.

New Industry Profile Shows:

How Food-Beverage Mfrs. Made Out, 1954-58 . . .

PRODUCT CATEGORY	VALUE OF SHIPMENTS	VALUE ADDED	PAYROLL COSTS	TOTAL EMPLOYEES	PRODUCTION WORKERS	MAN-HOURS	CAPITAL EXP.
Meat	+20%	+23%	+19%	−1%	−2%	−3%	+13%
Dairy	+22	+23	+24	+3	−7	−8	+22
Canned, Frozen	+34	+36	+23	+7	+4	+5	+17
Grain Mill	+ 8	+27	+14	−5	−8	+2	+49
Bakery	+22	+23	+18	+3	—	−1	+28
Sugar	+19	+37	+20	−5	−6	—	+79
Candy, Related Items	+13	+21	+16	−1	−3	−4	+49
Beverages	+15	+13	+14	−3	−8	−5	−17
Miscellaneous	+10	+25	+27	+3	+6	+5	+33
TOTAL INDUSTRY	+18%	+24%	+19%	+1%	−2%	−1%	+18%

Based on Census Bureau data

© FOOD Engineering

STRONG PERFORMANCE by food-beverage industry in the '54-'58 period is shown above. Matching your own figures against those presented here gives you a gage on how you stack up against competitive firms.

Handy Yardstick For Measuring

New Census of food industry gives you quick check on how your progress stacks up against competitors . . . Briefed here are key data on sales trends, labor costs, and market areas

ARE YOU keeping up with, or falling behind, your competition? Is your sales strategy on target in today's changing market?

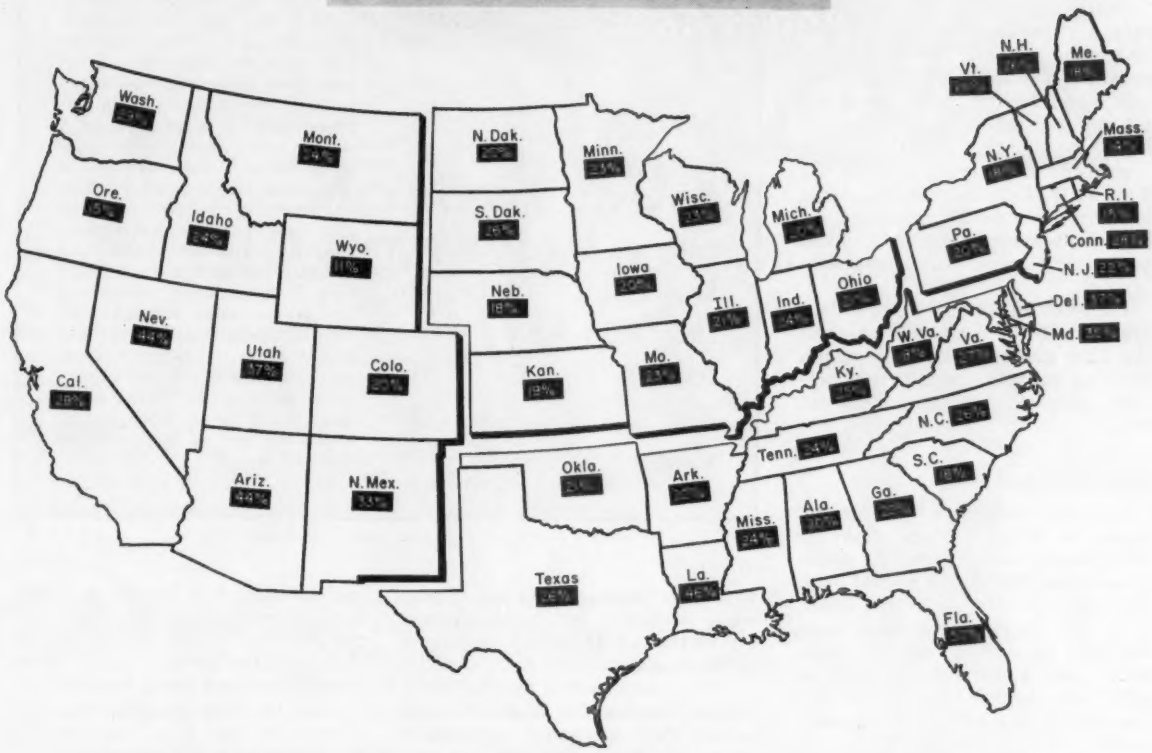
Quick, helpful answers to these —and other—business worries can be found in the just-released data turned up in U. S. Commerce Dept.'s 1958 Censuses of Manufacturers and Business. By comparing this latest food industry profile with the preceding '54 Census you get a rough picture of the kind of progress your company is making.

For example, if you're in meat packing, and your sales increased only 10% between '54 and '58, some double-checking may be in order. That's because the meat packer category of the food industry upped shipments 20% during that period.

Also, the Business Census, which breaks down total food store sales by individual states, shows the growth areas where you should be concentrating your sales firepower. Thus, if your business in Florida perked up 10% in the '54-'58 period, you may be missing a good bet. For people there spent

THAYER C. TAYLOR
Associate Editor, "Food Engineering"

. . . Uptrend in Food Store Sales



FASTEST GROWTH areas are in South and West, where food store sales jumped 27%. Trend is likely to continue as result of population shift to Pacific Coast, increasing industrialization of South.

Your Growth Rate

50% more in food stores in '58 than 4 years before.

Not Up To Par

Although Americans hefted their food and non-alcoholic beverage outlays 21% between '54 and '58, only 3 of the 9 food industry segments (listed in the Census) matched that growth rate. Biggest ground-gainer, as was to be expected, were canned and frozen foods — their shipments soared 34%. This surge was primarily due to the mushrooming popularity of the frozens—freezers sent 40% more volume into distribution pipeline vs. 27% for canners.

Also topping the rise in food-beverage expenditures were dairy and bakery products. Manufacturers in those two fields chalked up volume increases of 22%.

Trailing in order were: Meat products, with shipments up 20%; sugar, up 19%; beverages, up 15%; candy and related items, up 13%; miscellaneous products, up 10%; and grain mill items, up 8%.

Encouragingly, though, 8 out of the 9 segments boosted the critical "value added" factor (roughly, the spread between what was paid for incoming raw materials and what was received for outbound finished goods) at a faster rate than their shipments. While the circumstances vary within each industry group, the overall pattern indicates that food makers upgraded their operating efficiency.

Here's how the 9 industry segments made out:

	Shipments Gain—%	Value Added Gain—%
Meat	20	23
Dairy	22	23
Canned, Frozens	34	36
Grain Mill	8	27
Bakery	22	23
Sugar	19	37
Candy	13	21
Beverages	15	13
Miscellaneous	10	25

No Slowdown Here

Census data also shed light on one of the industry's most critical cost areas—labor. Here, too, by toting your own experience against the industry profile you can see whether your cost-braking efforts have been as effective as those of your competitors.

Despite the increased mechanization in food plants, total work-

force edged up 1% from '54 to '58. This was due to the stepped-up need for more people in vital non-production areas, such as administrative, clerical, marketing, and research.

However, wider use of labor-saving machinery did help food makers to whittle the number of production workers down 2%. Significantly, the industry wracked up its greater output with 1% fewer man-hours.

Pay checks fattened 19% in the 4-yr. span, Census reveals. Some industry segments managed to hold increases below that level, but others were much less successful.

Payrolls in the beverage field crept up 14%, a shade less than the 15% gain in plant shipments. Helping out was the fact that bottlers' employment rolls were cut 3%.

Not So Good

But the story was less encouraging in other sectors. Canners and freezers saw their total workforce jump 7%, which helped push payrolls up 23%. Dairy firms, with 3% bigger workforce, were squeezed by a 24% boost in payrolls. And sugar refiners, despite a 5% smaller workforce, still felt the effects of a 20% hike in labor costs.

By and large, though, payrolls probably would have spiraled even higher but for the greater use made of automatic equipment. Thus, grain mills lopped off 8% of their production people, beverage bottlers 8%; dairy outfits 7%, and sugar refiners 6%.

Comers & Goners

If you study the breakdowns Census provides on individual products, you get clues as to what competitive items are siphoning off sales from your market. Also, what related item fields represent attractive potentials for you.

For example, within each broad industry group there are individual products which made out much better than the field as a whole. Item: Shipments of aerosol whipped cream (including vegetable oil base) soared 104% vs. overall 22% gain for dairy products. Item: Sales of specialty breads leaped 121% as against general 22% improvement in the bakery sector.

Census data also spotlight how directly competitive products are making out in the never-ending battle for consumer favor. Thus, while packaged tea output dipped 6% in the '54-'58 period, packaged coffee volume almost doubled with a 96% gain. And while food plants churned 2% less creamery butter they marketed 15% more margarine.

Changing consumer tastes are also reflected in Census findings. While production of bottled soft drinks trended up 11%, kola-type thirst quenchers barely scratched out a 2% gain. The big news was in the other flavors which are catching on—2nd ranking lemon, lime, and lemon-lime combinations, with a hefty 31% increase, and 3rd place orange, up 36%.

The swing to ready-made foods, and the effects greater available leisure time has on eating habits, gets documentation, too. Factories were kept busy grinding out 38% more frozen specialties (fruit and pot pies, baked goods, dinners, foreign favorites) and 42% more potato chips.

Mapping Sales Terrain

This convenience trend reaches some odd corners of the food industry, by the way. As when you notice that sales of fresh cucumber pickles declined slightly in the face of a comfortable 24% uptrend for processed pickle products (mixes, relish, etc.).

If your sales curve followed the national trend in '54-'58, it would have shown a 23% increase. For the nation's food stores upped their volume by that much—$39,762,213,000 to $49,011,705,000.

And if your distribution was strong in the West and South, chances are you bettered the national average. Outlets in the West, helped by the region's population boom, hiked their sales 27%. In the South, where rapid industrialization has pushed up personal income, food stores clicked off the same expansion rate.

Naturally, the 4-yr. period produced some changes in the relative importance of the 4 regions.

In the Northeast, for example, where food stores had to be content with a less-than-national-average increase of 19%, sales dropped from 29.22% of the nation's total to 28.37%. The Midwest, with a 21% improvement, also saw its share dip, from 29.47% to 28.98%.

The growth-minded Southern and Western sectors continued to carve out wider chunks of total food store sales. The South upped its share from 25.1% to 26.12%, the West from 16.12% to 16.53%.

A few states ripped off some pretty spectacular increases. In Florida, outlets skyrocketed their volume 50%; in Louisiana, 46%; in Arizona and Nevada, 44%.

(End)

Stand-Off On Labor Costs

Payrolls as % of Sales

	1954	1958
Meat	9	9
Dairy	13	13
Canned, Frozen	15	14
Grain Mill	7	8
Bakery	27	26
Sugar	9	10
Candy	16	16
Beverages	21	21
Misc.	8	10
All-Industry	12.7	12.9

PAY checks continued to get fatter in the food industry between '54 and '58. In fact, payrolls rose at a slightly faster rate than did shipments. However, food makers still managed to keep the delicate ratio between payrolls and sales at a stable level during the 4-yr. span. Industry-wide, payrolls in '58 figured out to 12.9% of sales vs. 12.7% in '54. However, the true figure is somewhat higher, since any all-industry sales total includes duplication that stems from inter-plant shipments within the same company. Of course, product categories vary widely from the industry average. Thus, in bakery field, payrolls-as-share-of-sales in '58 were as high as 26%; in the grain mill sector they were as low as 8%.

It's Horse Sense . . . Why Chance Leaks in Seat Rings

Get Monel Seat BRONZE GATES made the way JENKINS makes them

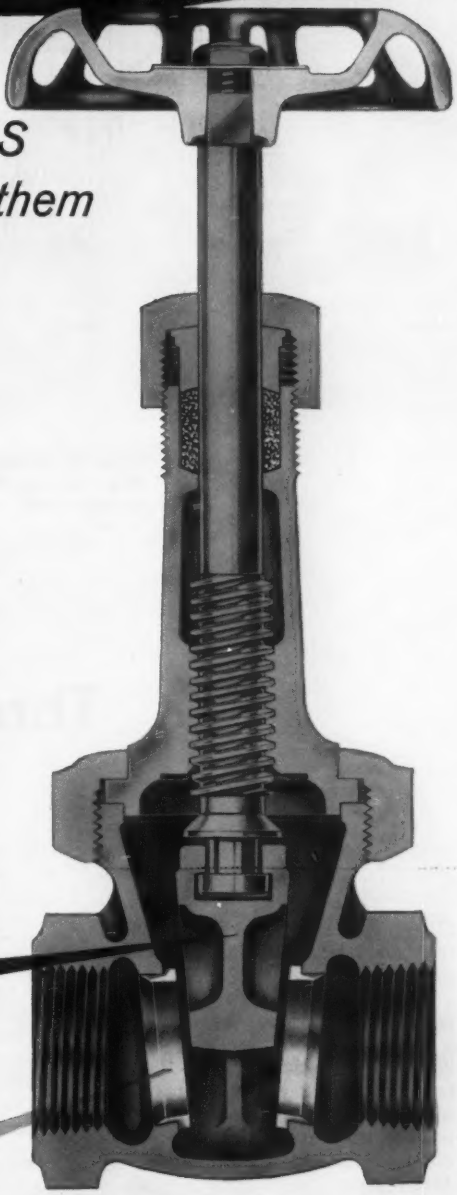
It's plain horse sense that you had better have the Monel seat rings EXPANDED (ROLLED) into the valve body if you want them to stay tight and leak-proof.

More horse sense . . . there's nothing valuable lost through having seat rings that can't be replaced by a regular maintenance man . . . **IF** the bronze or nickel alloy wedge has a lower degree of hardness than the heat-treated Monel seat rings. *(The way Jenkins makes them)* Then, the wedge takes the wear and seat rings are relatively unaffected.

Obviously, there's no faster, simpler or cheaper way to renew tightness and efficiency than to slip on a new wedge. And that, plus renewal of packing as needed, is all you need do to assure good performance from Jenkins Monel Seat Bronze Gates for as long as you'll need to care. Good service for scores of years is common.

Long, low-cost life also results from greater-than-ever-needed strength in every part of these valves. The records of millions of Jenkins Bronze Gates show you get full protection against all the stresses encountered in use.

Your local Jenkins Distributor will quickly supply your needs from a wide variety of Jenkins Bronze Gates. For information about these valves, write for folder No. 181-C. Jenkins Bros., 100 Park Ave., New York 17.



WEDGE is less hard than seat rings. Wear affects this easily replaceable part . . . NOT seat rings

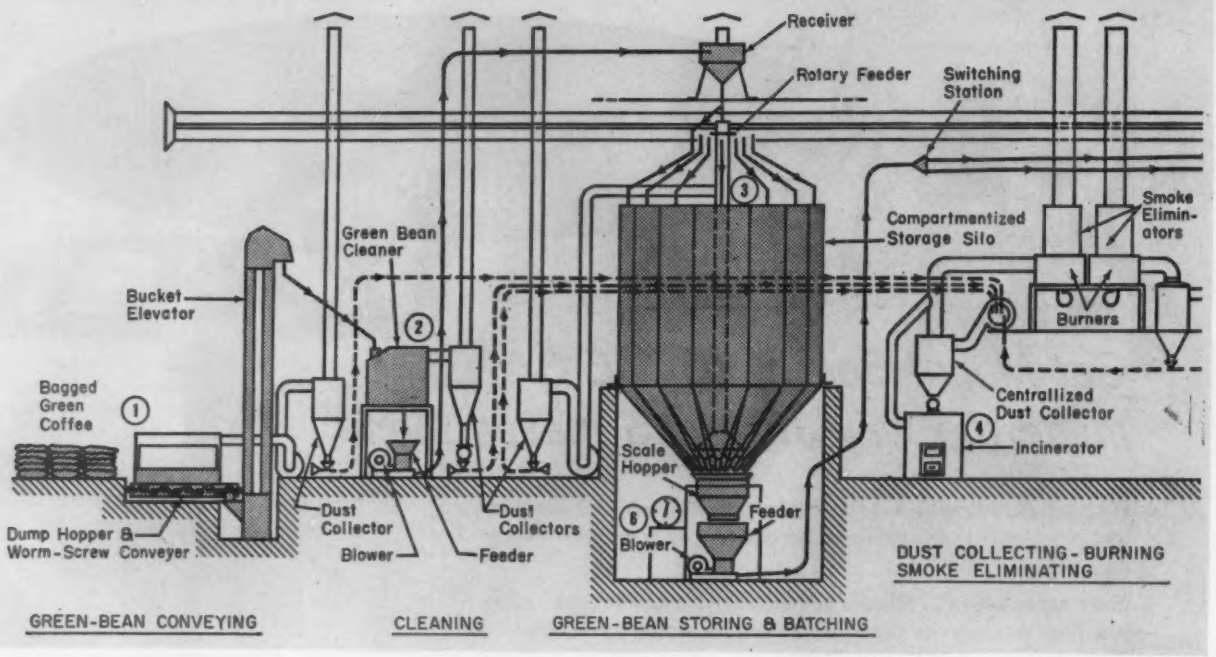
SEAT RINGS are expanded (rolled) into body. Permanent, all-around support is essential to prevent deforming, loosening, shifting, LEAKS

Sold Through Leading Distributors Everywhere

JENKINS VALVES

LOOK FOR THE JENKINS DIAMOND

JENKINS SINCE 1864 Jenkins Bros



FLOW of smoothly engineered line that ups quality and performance through built-in controls. Green coffee is emptied from bags into cleaner (2). From here, it is pneumatically conveyed into multi-cell silo (3) in which different coffees are stored by type. Varieties are

Three-Man Processing Line

Tops in material handling and automation it gives Canadian coffee roaster pushbutton control in high-speed continuous processing. Variety of uniform quality blends produced at 10,000 lb. per hr.

DIAGRAMMED ABOVE is one of the latest automated coffee plants on this continent.

Built by Nabob Foods, its objectives are: Increased output of a more uniformly roasted quality coffee; consolidation of coffee, tea, and peanut butter operations; and centralization of the company's western warehousing facilities (145,000 sq. ft.) on a 9½-acre site.

Nabob completed plans for the $2-million facility on Vancouver's outskirts two years ago. This entailed a major installation of new equipment, especially the most advanced for coffee roasting.

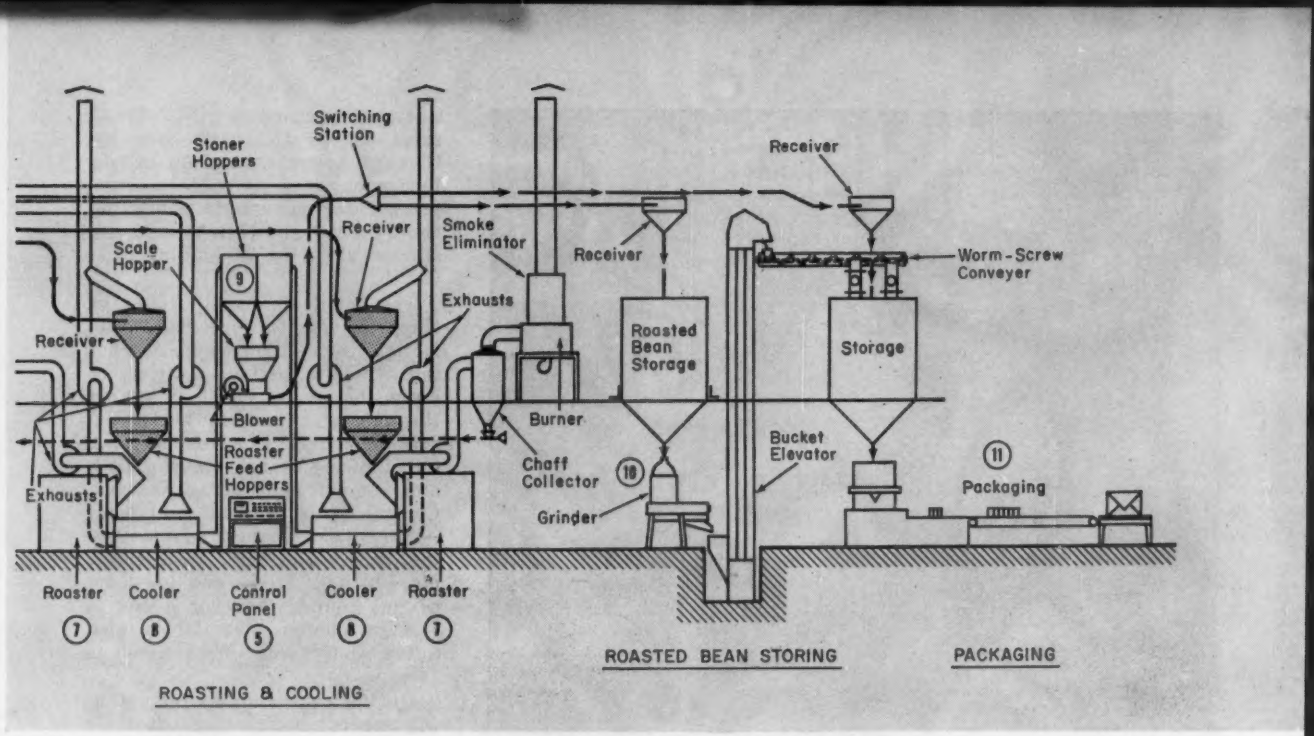
JOHN L. WALTER and JOHN V. ZIEMBA
Respectively, Director of Manufacturing, Nabob Foods, Div. of Kelly, Douglas & Co., Ltd., Vancouver, B. C., and Senior Associate Editor, "Food Engineering"

Which New System?

Before deciding on type of coffee installation, Nabob surveyed the equipment market and narrowed it down to two main sources of supply—the U. S. and Germany. The company felt that a complete coffee roasting plant manufactured by Probat, at Emmerich, Germany, deserved closer examination inasmuch as Nabob had used North American equipment for many years. Result was visits to Germany to inspect plants employing Probat equipment and convincing management of its suitability.

Probat's green coffee handling system was considered tops. Its electronic batch weighing as well as the automatic green and roasted coffee controls exercised by the roasting equipment seemed newer and more advanced.

Furthermore, Nabob is a Canadian firm and forced to buy abroad. So no matter where equipment is purchased, it has to be manufactured abroad. Distance no longer



then batchweighed into scale hopper (6)—blended or straight. Weighed coffee is next air-conveyed to roasters (7) and coolers (8). It's then conveyed to de-stoners (9), roasted-coffee bins, grinder (10), and packaging line (11).

Boosts Output, Quality

means much, nor is there a problem of replacement parts in event of hostilities.

Company coffee specialists were satisfied that the Probat roasters gave a high quality roast—uniformity of color and aroma. Another influencing factor was flexibility of the automatically integrated roasting equipment, which easily accommodates the variety of blends Nabob produces.

Advanced Layout

Five roasters produce some 10,000 lb. of roasted coffee per hr. And there is sufficient adjacent plant space to double future capacity without making any structural changes.

The 20-ft.-high building was raised to 30 ft. in the coffee manufacturing area to provide a mezzanine for such auxiliary equipment as cyclones, storage bins, after-burners, etc. Plant is laid out on the one-floor principle, with mezzanine constructed so entire facilities are completely visible and easily accessible.

This layout helps to solve supervisory problems, also obviates difficulties that might occur if some of the equipment were roof-installed and open to varying weather conditions. Moreover, present layout eliminated need for a load-bearing-type roof.

Offices are located apart from the manufacturing plant with its straight-line product flow. Access is through an enclosed, heated causeway. Purpose of separating offices from processing area was to avail one side of the plant for truck receiving, another for truck shipping, the third for railroad tracks, and the fourth for future expansion.

Nabob is operating on a multi-shift basis to meet sales requirements, since one coffee package out of every five sold in Canada is Nabob's. Moreover, multi-shift operation "ages" new equipment more rapidly—a probable advantage in view of rapid advances being made in design and development of new food-processing equipment. Accordingly, overhead expenses, per unit manufactured, will shrink.

Advantages Confirmed

Nabob attributes these solid benefits to the automated coffee roasting system:

... **Increased production** — as stated, the new roasting line is producing, ready for packaging, about 10,000 lb. of coffee per hr. And there's room for an additional side-by-side line of double future output.

... **Lower handling costs** — with the exception of dumping green

CLOSEUP of control panels in roasting area. They automate blend selections for any of five roasters, also monitor roasting cycle and cooling.

beans, the only manual labor involved is manipulation of pushbuttons and switches along the entire production line. Called for, in addition to the bean dumper, are two other men, one to operate the roasting department and one for grinding operations. Once the desired degree of roasting has been determined and pre-set, automatic controls take over.

Conveying of green and roasted beans is mainly pneumatic, minimizing bean breakage. Green beans are stored, ready for automatic batch weighing (in sequence) and according to varieties, in a multi-cell silo. Roasted beans are stored according to blends in bins.

... More uniform quality roasts—"Automatics" control composition (by weight) of individual roasting charges demanded by roasters, supply and graduate staging of heat to roasters, and rapidly cool beans to assure roasts of uniform aroma, color, and degree.

... Greater flexibility—A variety of blends can be automatically prepared in 10-lb. increments.

Automated Coffee Setup

Best way to understand how Nabob's new coffee plant functions is to divide its operations into four sections:

1. Handling green beans.
2. Automatic blending and charging of roasters.
3. Roasting and cooling.
4. Conveying roasted beans to packaging.

Handling green beans. Product flow starts at dock-side (in Vancouver) with checkweighing and palletizing of bagged green beans. Employed to eliminate re-palletizing in the coffee plant are special type pallets that are interchangeable with those used at dock-side. Maximum utilization of floor space is accomplished through use of lift trucks with a 13-ft. fork height, which permits stacking highest pallet to 17½-ft. height.

At the plant green beans are charged into the automatic coffee roasting system at dump station—point No. 1 in flow diagram. Beans are then hopper-fed into a worm-screw conveyor which, in turn, feeds a bucket elevator charging a cleaning machine (No. 2) at rates up to 13,500 lb. per hr. Cleaned beans then drop into a feeder operated by a 15-hp. compressor for penumatic conveying to a receiver and then to a 10-cell storage silo (No. 3) holding 275,000 lb.

The control panel (one of three) directs, through manual selection, the cell (or compartment) into which a particular variety of green beans is to be delivered through an electrically-operated rotary feeder. Check-back readouts indicate beans' transport path and compartment being charged. Control lights show all equipment—conveyors, cleaner, dust collector, centralized chaff incinerator, etc.—in use. High- and low-level alarms sound whenever a cell is full or empty. Feeding is also automatically cut off when cell is full.

During bag-dumping and cleaning operations, coffee dust is simultaneously collected and fed to centralized dust-collecting system (No. 4). Here, dust is continuously charged into a chaff incinerator hooked up with a smoke eliminator housing its own burner. Result is complete combustion of all exhaust.

Blending and charging of roasters. These operations are controlled from the roaster panelboard (No. 6). Pre-set amounts of beans (to make a blend) are automatically controlled through a photoelectric circuit.

Batching flexibility is easily achieved through panelboard control. Blends containing as many as ten varieties of green beans can be scaled into hopper. And any multiple of 10-lb. increments can be selected for the different type beans. Scale draws beans from silo in 10- to 600-lb. quantities.

Although pushbutton-operated panel can be set to deliver the same blend to roaster all day long, it can be quickly reset for different blends as often as required—any time during production. Also should, by chance, two roasters call for a new charge of beans at about the same time, they will be served in sequence.

From scale hopper, the weighed blend of green beans is pneumatically conveyed (by 15-hp. compressor) through electrically motorized switching station to receiver and then to roaster feed bin. Actual call for blend is made by each of five roasters as soon as each one's feed hopper is

empty. This way, waiting for a charge is eliminated, since blend is scale-batched and stored—to be released, on demand, into the roaster.

Here again, travel path (of blend) is indicated by control-panel-mounted readout lights that show flow through various processing stations—from scale hopper to roasters. As with the green-bean conveying system (from dump hopper to silo), dust is also collected and burned. From each roaster, smoke too is eliminated and roaster chaff is collected and directed to the centralized dust collector and incinerator (No. 4).

Roasting and cooling. Each gas-fired roaster has a capacity of about 2,400 lb. of green beans per hr. The double-wall (air insulated) roaster is a non-perforated rotating cylinder with heating units located below for bottom-to-top hot air flow. Roasting is also accomplished by heat radiated through roaster's drum shells. Large cylinder opening at front end of each roaster assures within-seconds discharge of roasted coffee onto cooler.

Roasting cycle (about 15 min.) is automatically and uniformly controlled by Probat-modified Minneapolis-Honeywell controller-recorders consisting of four temperature set points adjusted to suit coffee and desired roast. A temperature probe senses only bean temperature, which is the only reliable criterion for uniform roasting.

Green beans are automatically charged (through stepping switch) into roasting chamber only when roaster has reached a pre-set temperature. As roasting progresses, each temperature set point stages burners and, at conclusion of roasting, automatically controls aroma, quenching, discharge of beans from cylinder, closing of roaster, preheating, and recharging. These control variations are adjustable by time-lag relays.

Nabob's roasters are also hooked up with smoke eliminators, despite the fact that smoke-control measures aren't as stringent in Vancouver's outskirts as in some cities. Management feels this is good public relations, and also anticipates Vancouver's great growth.

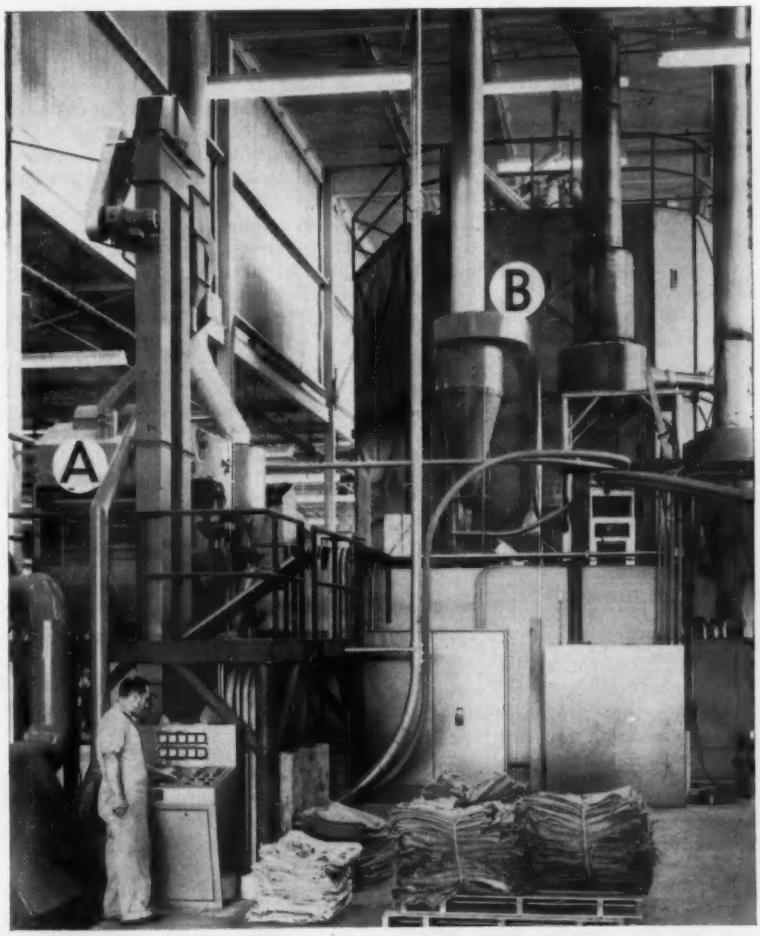
Coolers (No. 8) are of down-draft type. A pressure ventilator forces outside air onto cooler, and a second fan exhausts air under cooler. This downstream cooling system results in a 3-min. fast cooling (without need of temperature controls) and prevents danger of after-roast.

Conveying to packaging. From coolers, roasted beans are conveyed through de-stoners (No. 9) to roasted coffee bins.

Conveying of roasted beans is also panel controlled. Here again, readouts show course of flow, indicating position of diverter valves and storage bins into which beans are diverted. High-level signal lights, hooked up with squawkers, prevent overloading.

As needed, beans are fed to a grinder (Jabez Burns) (No. 10) from which ground coffee is discharged into a pit containing boots supplying bucket elevators. These lifts then transfer ground coffee to worm-screw conveyors feeding storage bins on mezzanine floor. From bins, coffee is fed to packaging lines (No. 11) (Consolidated and Hesser), where it is filled and sealed in Pliofilm-lined bags. Nabob has installed a Hesser packaging machine that handles the Pliofilm-lined bags.

Pliofilm-lined bags are employed to protect coffee's fresh flavor. This added protection, although expensive, is essential to Nabob's large distribution throughout Canada. And it has paid off by putting—and keeping—the company in Canada's number-one position. (End)



FROM CONTROL PANEL, operator directs movement of green beans from dump hopper, through cleaner (A), to multi-cell silo (B). Panelboard lights indicate high and low levels in each silo cell and product flow through various processing stations.

*Published as a special service to industry at request of National Canners Assn.**

NCA Committee Finds . . . Faulty Retorting Prevalent

Survey of 330 canneries uncovers repeated violations of 10 basic rules, less frequent violations of 5 others

THE CRANBERRY INCIDENT of last fall threw a scare into the American housewife—but did it scare food processors enough?

This is the question posed by executives of the National Canners Assn. And the answer, as far as its Committee on Retort Equipment and Operation* is concerned, is a resounding "No."

The conclusion is based on results of the Committee's survey (conducted during the past year) of retort installations in 330 canneries packing low acid products.

In the surveys, the following infractions of good retorting practices were noted repeatedly:

1. Insufficient venting.
2. Baffle plates in bottom of retorts.
3. Broken thermometers.
4. Illegible thermometers.
5. Failure to check thermometers and pressure gages against standard units.
6. Vent valves partially opened.
7. Inadequate steam spreader design.
8. Use of globe instead of gate valves in vent lines.
9. Venting into manifold with back pressure.
10. No pressure-temperature agreement between gages and thermometers.

In addition, other malpractices were observed. Some of these are:

1. Incorrect process timing.
2. Processing according to pressure instead of temperature.
3. No bleeders on thermometer wells.
4. Steam entering and being vented at same end of retort.
5. No steam spreaders.

*The Committee comprises: D. V. Alstrand, American Can Co.; J. H. Bock and Lawrence Newsome, Continental Can Co.; Ralph A. Smith, Crown Cork & Seal Co., Crown Can Div.; Donald L. Schott, Food Machinery & Chemical Corp.; E. C. Grab, Jr., Heekin Can Co.; Harold F. Troeger, National Can Corp., G. R. Bee and J. M. Reed, National Canners Assn.

Which brings up the question, "Who is responsible for processing the output of a canning plant?" Basically, it is plant management.

The Committee concluded that "Cook room operators must be selected carefully and must understand fully the importance of operating retorts. They must be instructed in the operation and be willing to follow these instructions. This is management's responsibility." It is a continuing responsibility of management since cook room men change frequently.

Let's consider why retort operation is one of the most important jobs in the cannery, and how to do it properly.

All raw foods contain bacteria, but when a can is sealed no more can get in, and proper retorting kills those inside. If faulty practices are used, however, some bacteria may survive, and since these may include gas-producers the can may swell or even blow up. But if all the bacteria are killed, the canned food will keep.

Venting and Cooking

When the retort is filled and closed the space between cans is occupied by air which must be blown out before starting the process. This is done by injecting steam at one end and allowing the air to vent from the other. For satisfactory operation, the steam must come in fast and the vent pipe must be large enough to permit easy escape of the air. Vent valve must be wide open.

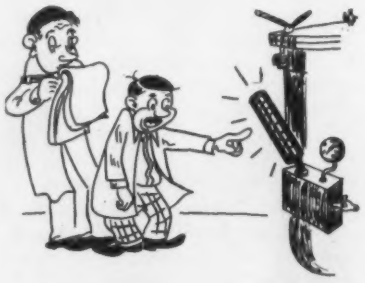
When retort reaches cooking temperature, vent valve is closed and timing can be started. Make note of the time at steam-on, temperature up, and when cook will be finished. Check your addition to make sure it is correct. Incidentally, good timers are available to minimize errors.

Checking Temperatures

To check the temperature accurately, a glass-stem thermometer must be installed in each retort. (Specifications for proper thermometers are given in N. C. A. Bulletins 26L and 32L.) The committee does not at the present time recommend dial thermometers.

Leave small petcocks on retort wide open during the entire cook. They get rid of air in the steam and circulate steam around thermometer bulb. Unfortunately, there is some confusion in terminology, and many canners refer to petcocks as vents. These are not vents, they are bleeds. They are of no value in venting the retort during the come-up.

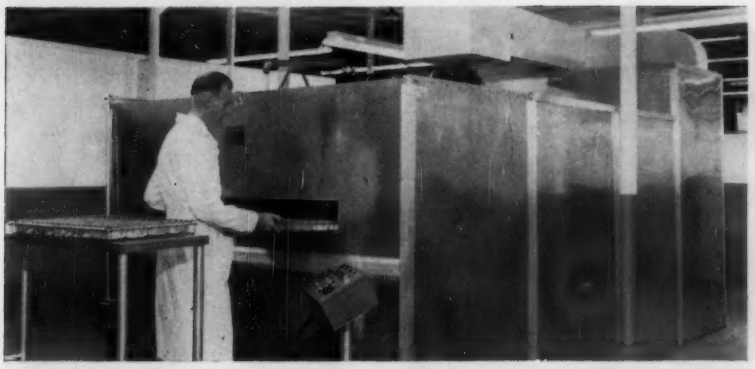
Make sure that all compressed air and water valves are closed tightly during cooking. In addition to rust, leaky valves can result in under processing.



Keep checking the thermometer during the process to make sure the right temperature is maintained.

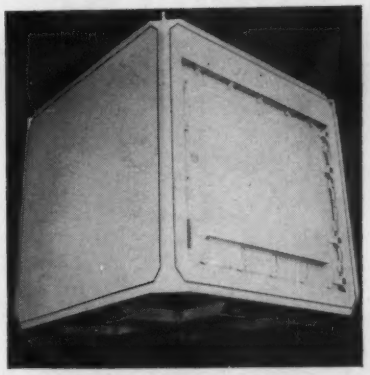
If proper processing time and practices have been used, bacteria will be killed before end of cook, leaving a safe, commercially sterile canned food. (End)

Processing unit freezes food in 5 min. . . .



TRAYS OF HOT FOOD are inserted in production unit, then conveyed through nitrogen mist, immersed in liquid, and discharged solidly frozen.

. . . container holds it frozen for days



SPECIAL CONTAINERS, like this one are in regular overseas service.

Liquid Nitrogen— Frozen Foods' "Man Friday"?

It freezes products ultra fast, improves their quality, holds them at sub-zero temperatures . . . but can the processor afford to use it?

STRIKING CHANGES in production and handling of frozen foods could result from an exhaustive research and testing program now being conducted with liquid nitrogen.

To date these tests have demonstrated its feasibility for—

► **1. Transportation of frozen foods over long distances.**

► **2. Drastically reducing freezing time, and thus improving quality of precooked frozen foods.**

Proved on Bermuda Run

Present concept originated with the New York shipping firm, Isbrandtsen Co's. search for a method of transporting frozen foods overseas without using mechanical refrigeration.

This resulted in design and construction of 8 x 8 x 8 ft. insulated containers (photo). These have been successfully used for several years, making weekly shipments of frozen foods to Bermuda, and less frequent ones to Spain, Germany and Greenland for the military.

To promote further use of liquid nitrogen refrigeration, Isbrandtsen set up a special division — Liquefreeze Co., Inc.—which has been working with railroads, truckers and food processors.

This has resulted in several dramatic demonstrations. For example, a recent cross-country shipment of frozen foods moved from California to New York without attention enroute.

Used was a revamped refrigerated car. It was loaded with 61,000 lb. of broccoli and spinach at Libby's Sunnyvale plant, and the car charged with liquid nitrogen. Seven days later on arrival in New York, products were in perfect condition (photo).

Temperature at time car left California was −320F. On arrival in New York it was −124F.

For the food processor, Liquefreeze has developed an "automatic production unit" which was demonstrated recently at plant of maker, Idaho Maryland Mines Corp., Glendale, Calif. Unit cooled cooked products from 160-180F. to zero in less than five minutes.

With the new device, packages of cooked foods are placed in wire baskets, and the baskets set in cradle type conveyors. These move them into an enclosure where the food is sprayed with liquid nitrogen.

This exposure quickly freezes top layer of food in each container and prevents subsequent spillage. Packages are then immersed in nitrogen (temperature of −320F.) which completes the freezing process.

Immersion time and overall speed of freezing can be regulated according to type and size of container, density of product, and exit temperature desired.

Company claims that the ultra-fast freezing locks in food flavors, and enables retention of elements that are lost during present cooling procedures (and limited tests with ice cream seen to bear this out). It foresees direct packaging of the frozen foods in shipping cartons followed by distribution without further refrigeration.

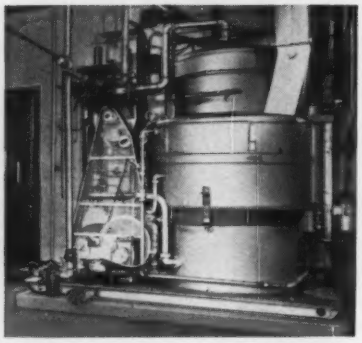
Hurdles—Past, Present

In working with railroads and truckers, Liquefreeze discovered that present insulating practices were inadequate for the extremely low temperatures produced with liquid nitrogen. Biggest headache was contraction of insulation which resulted in large cracks, and consequent high heat losses.

To overcome this, company developed special spring-loaded, interlocking, insulated panels. Reef-

3 BOILERS IN 1 COMPACT PACKAGE!

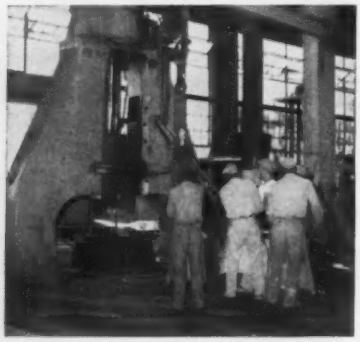
FOR ORDINARY STEAM REQUIREMENTS: The cycle-type Modulātic standard unit furnishes 90% dry steam for most ordinary needs such as cooking, heating water, drying, cleaning, etc.



WHERE DRY STEAM IS REQUIRED: The Modulātic may be used with an optional steam separator, for over 99% dry steam for heating, moulding, forges, operation of power equipment, etc.

VAPOR MODULĀTIC WATER TUBE BOILERS

¼ the size and weight of conventional boilers... largest size (150 BHP) uses only 5′ x 8′ space.



IF CONSTANT STEAM LOAD MUST BE MAINTAINED: For applications where even a nominal drop in pressure cannot be allowed, an optional steam reservoir may be added to the standard unit to provide a "cushion" during an off cycle.

Efficient . . . economical . . . proved in thousands of installations all over the world! Vapor Modulatics furnish high or low-pressure steam (at design pressures up to 1000 psi, or even higher). Lowest installation costs—delivered completely assembled, wired and tested . . . all sizes (40 to 150 BHP) fit through plant doors, with no special foundations or special chimneys needed. Simple push-button operation; built-in safety controls. May be mounted in multiple units to provide for the largest steam requirements—without the inefficiency of idling larger single boilers as demand slackens.

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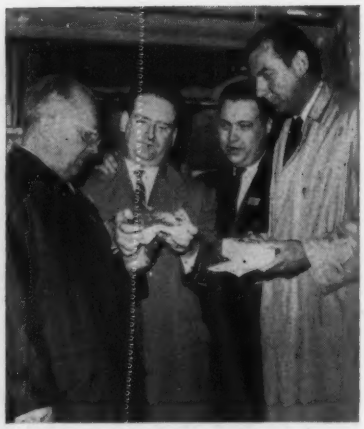

SEVEN DAY TRIP from California to New York without mechanical refrigeration caused no change in this broccoli —part of 61,000-lb. shipment.

ers and freight cars are lined (ceiling, floor, sides and ends) with these panels. As temperature falls, the springs hold panels together producing a tight container inside the car.

This method of insulating enabled the 20-yr. old car (originally constructed for ice and salt refrigeration) to hold the extremely low temperature in the recent cross-country demonstration.

Availability of liquid nitrogen is no problem. Companies such as Linde Div. of Union Carbide Corp., and Air Reduction are in positions to supply it to practically any food processor.

Its cost, however, is the big question. Without divulging figures, Liquefreeze representatives say that nitrogen-freezing is economically competitive with other methods of refrigerating products in transit for a processor shipping 10 or more tons on trips of 3 days or more duration.

They also feel that it will be possible to determine the exact quantity of nitrogen required to insure arrival of a cargo at any pre-determined temperature. This should have its effect on the cost.

For the processor, Liquefreeze foresees on-site liquid nitrogen plants similar to the liquid oxygen plants used by steelmakers. This would make possible recovery of the "spent" gas that is now allowed to escape.

Competitive or otherwise, these developments should be watched closely by the frozen food people who are deeply concerned at this time with effects of the new AFDOUS code (FE Staff).

CIRCLE 52 ON READER SERVICE CARD

CIRCLE 53 ON READER SERVICE CARD ➔

Drewrys takes pride in the appearance as well as the performance of its Mack fleet. B-61ST models haul GCW loads of 72,000 lbs. on high-speed toll-road runs.

At Drewrys

Truck appearance, too, is good for business

MACK for over 7 straight years NO.1 by far in sales of diesel trucks

"We not only count on our trucks for top-notch performance, but use them to help create a favorable impression for our product with customers and prospective customers," says an executive of Drewrys Ltd., U.S.A., Incorporated, of South Bend, Indiana. "Macks' rugged, honest, businesslike appearance and outstanding performance record fit the bill exactly."

And there's a big dollar reason, too, behind Drewrys' choice of Macks. Says Fleet Manager K. W. Riffel, "Ours is an 'arrive—unload—load—and on the road again' type of operation. We're expanding territories . . . and at the same time trying to keep costs down. Our Mack trucks supply the dependability needed to maintain schedules day after day and still give us maximum fuel and maintenance economy. After more than 150,000 miles per unit, we are averaging 6.5 to 7 mpg with maintenance of only one cent per mile, including oil and filters."

Drewrys' profitable experience with Macks is right in line with similar reports from all over the country, and results from the different way in which Macks are built. A Mack truck is a quality vehicle. It is not just Mack-assembled—it's Mack-*built*. Mack manufactures its own engines, axles, transmissions, cabs, and other components. Every vital part is built by Mack for Mack trucks alone . . . Mack quality features consistently produce superior performance and balance-sheet savings. So why not put Macks to work in your operation? Your Mack branch or distributor is the man to see. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

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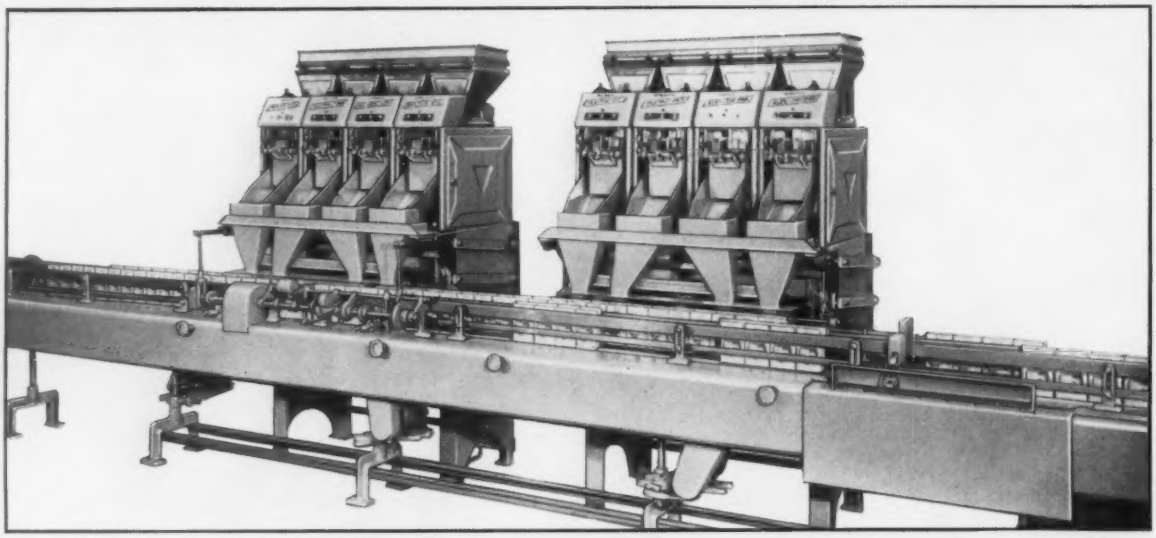
MACK
FIRST NAME FOR
TRUCKS

What Does It Take To Build Automatic Packaging Machinery?

Obviously, the engineering development of any fully automatic packaging installation is a complex matter. Any good engineer can design a custom machine that will do the job one way or another. However, the problems presented by actual production conditions need the simplest, most economical solution. The machine that best solves the problems is always a combination of proven automatic packaging techniques and experience. In other words, a fitting of perfected methods into your plant operations.

That "fitting" is often the only difference between uneducated iron, and an automatic packaging system that really pays off.

HOW DO YOU KNOW *WHOSE* AUTOMATIC PACKAGING MACHINE YOU SHOULD HAVE?



Regardless of what form the machine itself takes, the success of its operation in *your* plant depends on two basic factors—the talent and experience of the machine manufacturer to fit your requirements . . . and the proven automatic units that he combines into a machine.

First, let's consider the units or "proven concepts" he has developed in the years of his experience. And, for the sake of example, take the machine shown above that packages a nationally known brand of baby cereal:

The machine must be capable of continuous high speed operation under the toughest plant conditions. It must operate with the least possible attention.

This Triangle Automatic Machine Delivers 120 Packages Per Minute And Is Capable Of More . . . Truly Automatic—Week After Week, Month After Month And Year After Year.

The machine must be accurate. It must deliver packages filled to as precisely the right amount as possible.

This Triangle Automatic Machine Uses Elec-Tri-Pack Net Weighing Scales That Are Sensitive To 1/32 Oz. Or A Single Piece.

Triangle's 37 years of automatic packaging experience is the other factor in the success of this baby cereal packaging machine.

It has given Triangle the ability to provide any type of feed from floor to overhead for handling dog biscuits or powdered dry milk. Furthermore, the Triangle machines are properly synchronized with other plant processing operations.

Triangle *is* a specialist in the business of fully automatic packaging machines. Many high volume packagers of a wide variety of products (names on request) depend on Triangle equipment.

The next time you're considering machinery of this type, ask the location of other Triangle installations, and see the facts for yourself.

37 YEARS

•••••••YOU REALLY SAVE WITH•••••••

TRIANGLE
PACKAGE MACHINERY COMPANY

6637 W. Diversey • Chicago 35, Illinois
Telephone TUxedo 9-0200

F4

ONE package supplier, Owens-Illinois, offers *all* of these services to marketers of instant products: full line of stock Duraglas® jars and special shapes . . . choice of flint or amber glass . . . closures . . . stacking features . . . shipping and display cartons . . . Tacseal membrane over pouring surface for moisture protection . . . equipment for mechanical vacuumizing . . . equipment for packaging under inert gas . . . *plus* complete package design and technical assistance to be sure the package performs as it should.

Get in touch with your Owens-Illinois salesman, or write.

So many instants go to market in Duraglas containers—

- Instant Coffee
- Instant Malted Milk
- Instant Beverage Mix
- Instant Dairy Products
- Instant Tea
- Instant Fruit Drinks
- Instant Minced Onion
- Instant Fortified Food Supplement
- Instant Sauces
- Instant Soups

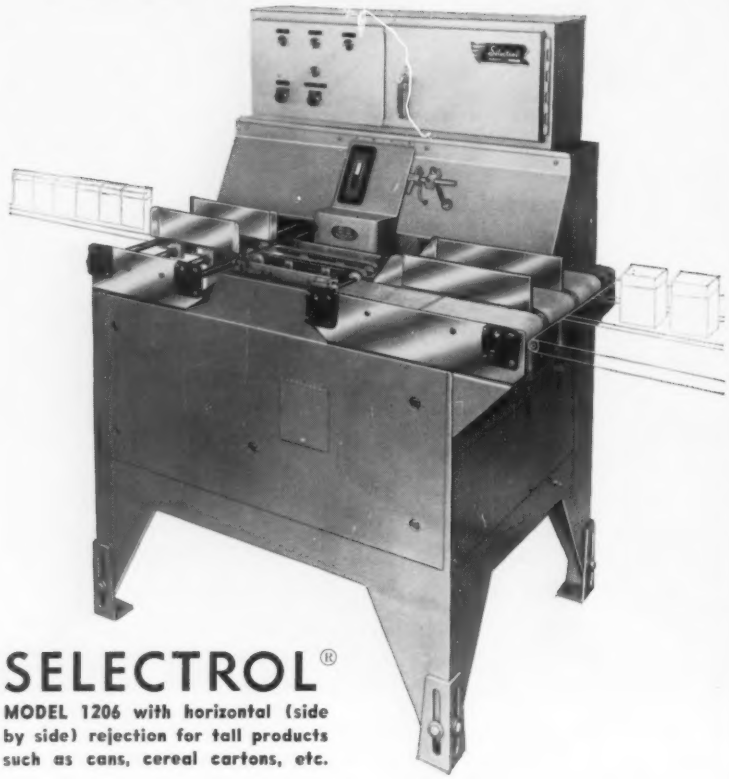
DURAGLAS CONTAINERS
AN (I) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES • TOLEDO 1, OHIO
PACIFIC COAST HEADQUARTERS • SAN FRANCISCO

CIRCLE 55 ON READER SERVICE CARD

Exact Weight's New Automatic Checkweigher

Latest electronic controls
New engineering features
New compact size



SELECTROL®

MODEL 1206 with horizontal (side by side) rejection for tall products such as cans, cereal cartons, etc.

This new Selectrol checkweigher automatically weighs, classifies and sorts at speeds up to 120 items per minute, depending on size and weight of object. Rejection accuracy is 2/10 percent of the weight of the commodity at maximum speed.

New Selectrol features include compact size that requires minimum space in a conveyor line . . . and simplified circuits. Electrical controls are mounted above the conveyor line for easy accessibility.

Selectrols are made by Exact Weight, a leading manufacturer of job-engineered scales for 45 years with experience gained through hundreds of checkweighing installations during the past 18 years. For complete details, write for Bulletin 3377.

THE EXACT WEIGHT SCALE CO.

910 W. FIFTH AVE., COLUMBUS 8, OHIO

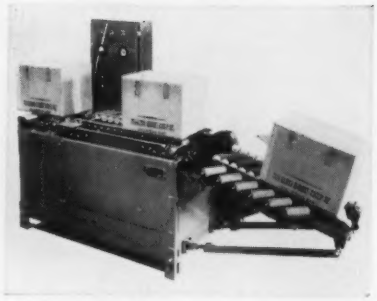
In Canada: 5 Six Points Road, Toronto 18, Ont.

Sales and Service Coast to Coast

Exact Weight SCALES

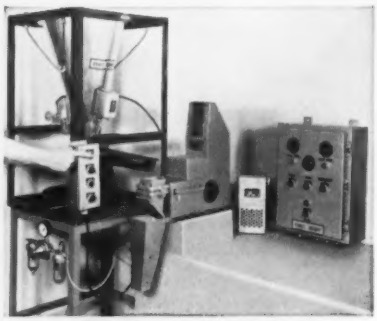
Find us in your local "Yellow Pages"

OTHER EXACT WEIGHT EQUIPMENT



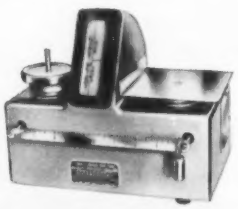
CASE AND BAG CHECKWEIGHER

Model 1250 Selectrol designed for checking bags, cartons and cases from 20 lbs. to 100 lbs. Speeds to 30 products per minute; rejection accuracy 1/10 of one percent at maximum speed. Can be supplied with or without rejection equipment. Write for Bulletin 3376.



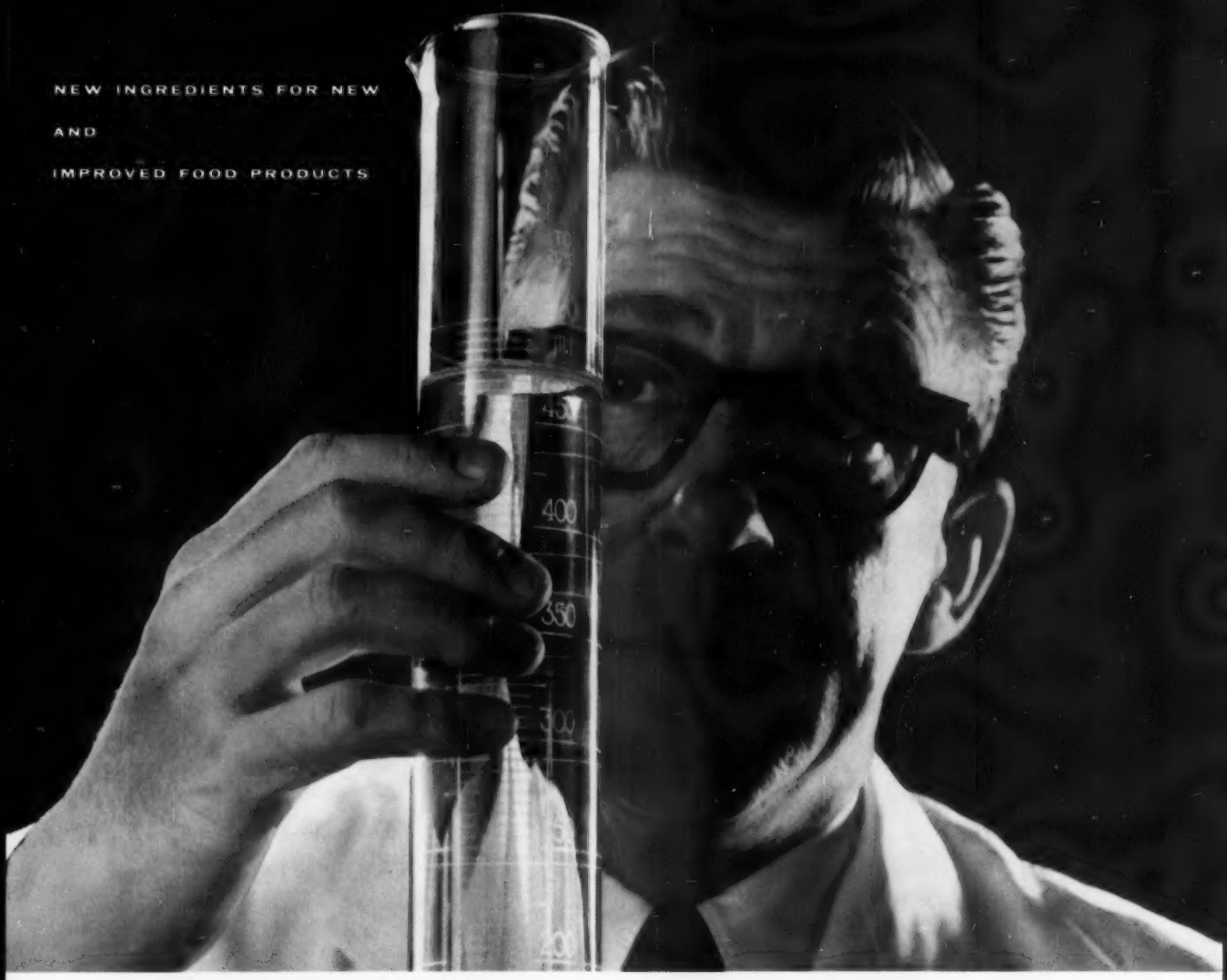
PRECISION AUTOMATIC NET WEIGHING MACHINE

Model 4601NW for weighing dry, free-flowing products with accuracies of 1/10 gram on quantities below 10 grams and one percent accuracy on quantities of 10 grams and above. Models with capacities from 50 grams to 500 grams. Write for Bulletin 3363.



SHADOGRAPH® SCALES

Extremely fast with high degree of visible accuracy for use in all kinds of repetitive production weighing operations. Available in 35 models in capacities from 2000 milligrams to 100 lbs. Write for Bulletin 3333.



FLO-SWEET INVERDEX ... for balanced body and sweetness

How many food products will just one new ingredient improve?

Probably hundreds! In the case of Inverdex, the Flo-Sweet invert-dextrose liquid sugar, new uses are being discovered almost daily. Bottlers . . . canners . . . fountain syrups are finding that this remarkable sweetener adds to body and flavor, enhances quality, and often permits important production savings to be realized.

Inverdex is just one of the new Flo-Sweet sugars developed to give you a *combination* of desirable characteristics never before available. For full information, just consult your Flo-Sweet Engineer or write for the brochure "New Ingredients for New and Improved Food Products." It tells all about four new Flo-Sweet liquid sugars!

A FEW OF THE FOODS INVERDEX IMPROVES:

Flo-Sweet Inverdex—high purity liquid invert combined with doubly refined dextrose—is finding widespread utility in canning, packing, bottling industries, and in fountain syrups of many types. You'll want to try it for the new food products you are developing!

REFINED SYRUPS & SUGARS, INC.

YONKERS, NEW YORK

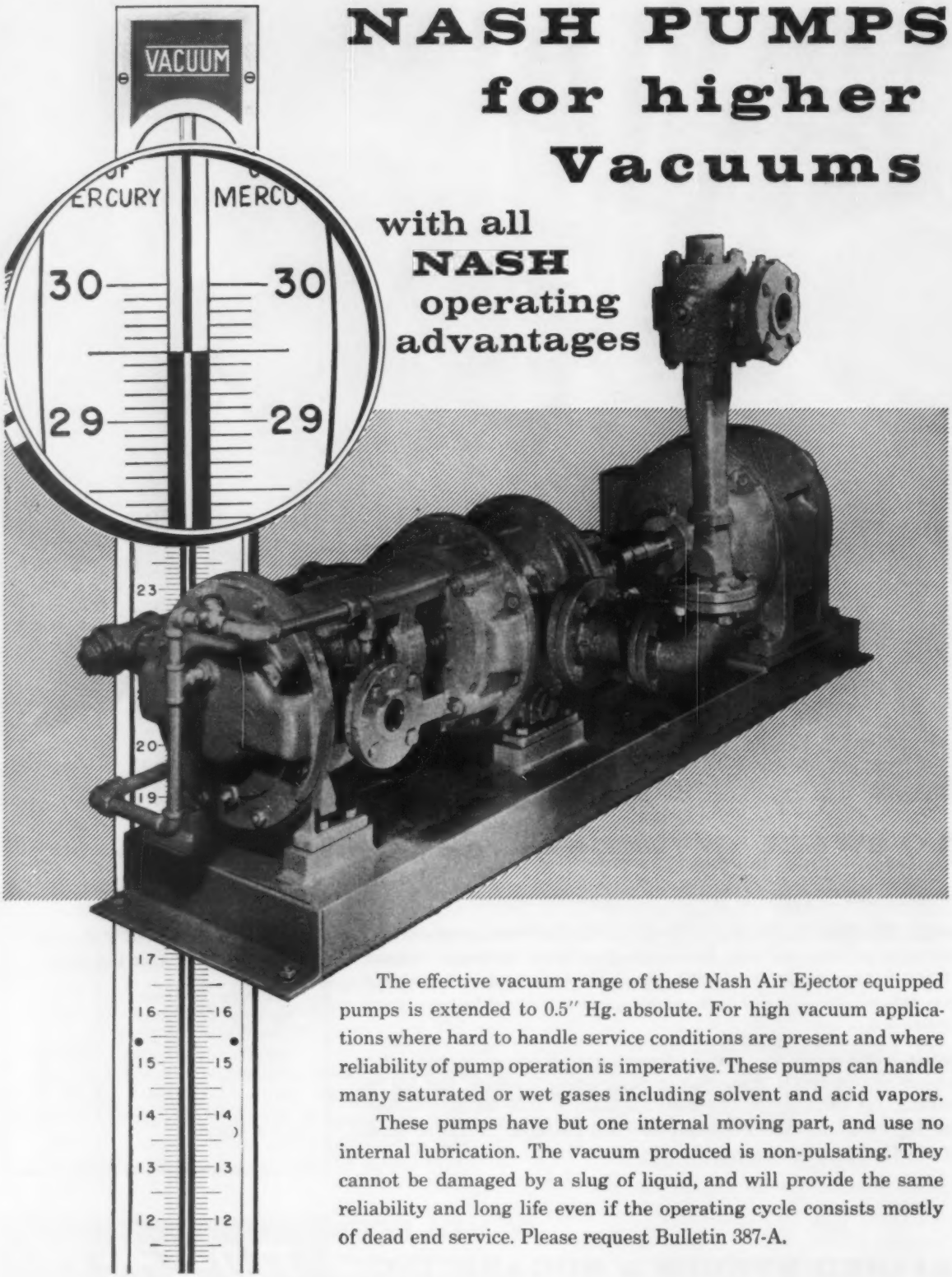
SERVING INDUSTRIAL SUGAR USERS EXCLUSIVELY
FROM YONKERS, ALLENTOWN, DETROIT, TOLEDO

FLO-SWEET®

FIRST IN LIQUID SUGAR

NASH PUMPS for higher Vacuums

with all **NASH** operating advantages



The effective vacuum range of these Nash Air Ejector equipped pumps is extended to 0.5″ Hg. absolute. For high vacuum applications where hard to handle service conditions are present and where reliability of pump operation is imperative. These pumps can handle many saturated or wet gases including solvent and acid vapors.

These pumps have but one internal moving part, and use no internal lubrication. The vacuum produced is non-pulsating. They cannot be damaged by a slug of liquid, and will provide the same reliability and long life even if the operating cycle consists mostly of dead end service. Please request Bulletin 387-A.

NASH ENGINEERING COMPANY

SOUTH NORWALK, CONNECTICUT, U. S. A.

WONDERING HOW TO CUT PAINT MAINTENANCE COSTS?

If you want to cut maintenance costs, Herb Norton's a good man to talk to. A member of Du Pont's recently formed Technical Service Group, Herb's a specialist whose job it is to solve maintenance painting problems of every description. In his words:

"The further maintenance dollars go, the greater the return on your investment in plant and equipment. True costs, however, aren't determined solely by the price of the paint. To measure value accurately, you've got to take into account such factors as expense of application and length of time the paint job lasts. Believe me, it's false economy to start with anything but top-quality finishes. That's one reason Du Pont paints are so often specified.

"Another reason, equally important, is the expert guidance you get from Du Pont. You see, we go right into your plant or installation and make a thorough study of your individual maintenance problem. Then—drawing on our own experience, backed up by Du Pont technical competence—we formulate a painting program that meets your needs exactly. Service like this helps you achieve lasting protection against every conceivable corrosive condition, *at lowest cost per square foot per year.*"

If you have a maintenance problem you'd like to discuss with an expert, there's a man like Herb Norton in *your* area. To meet him, just call your nearest Du Pont district sales office. Or write: E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Dept. FE-68, Wilmington 98, Delaware.

* * *

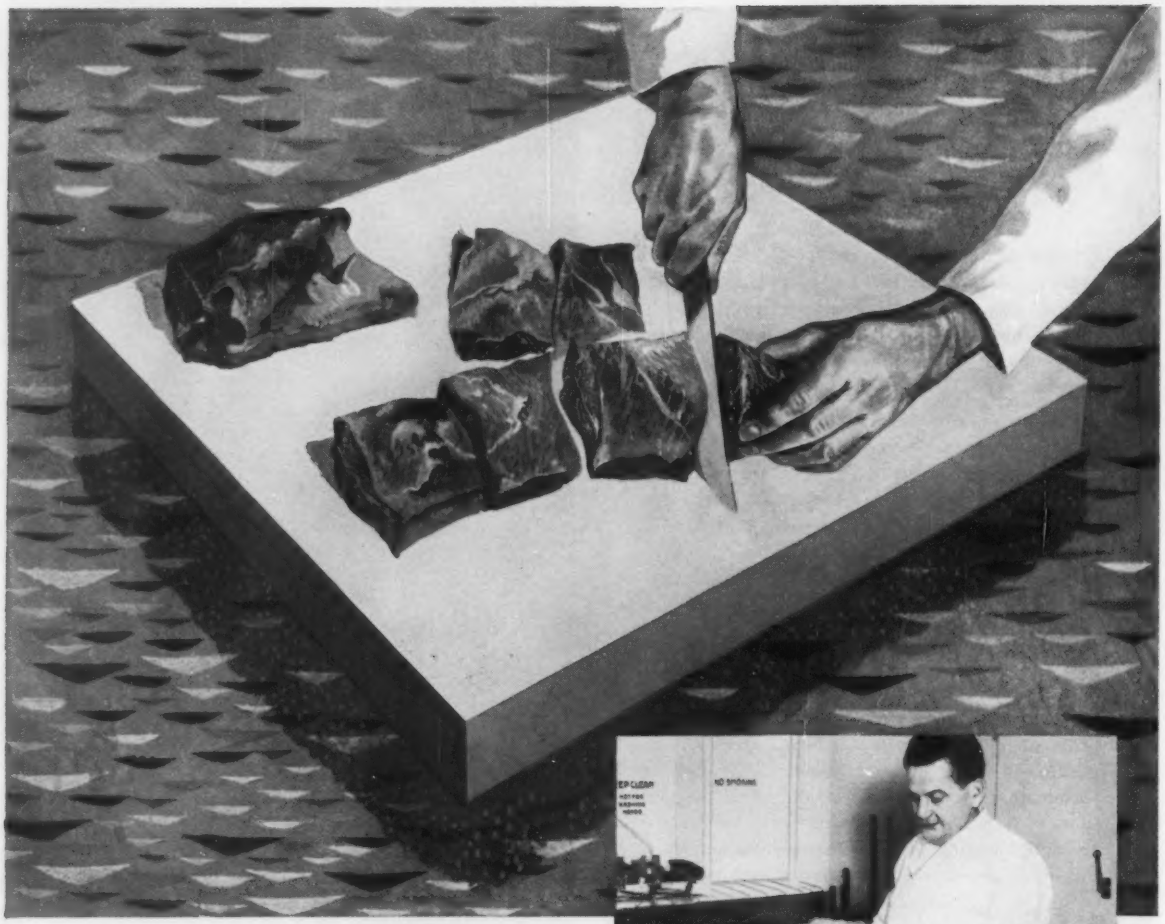
Herbert L. Norton came to Du Pont's Finishes Division in 1939, having studied chemical engineering at the Georgia School of Technology. As he added experience, increased responsibilities kept pace. Currently, Herb is Southeastern District Manager, Industrial Maintenance Sales. His background includes problem-solving in such areas of industry as textile, paper, petroleum, food, marine and public utilities.

DU PONT PAINTS

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

CIRCLE 59 ON READER SERVICE CARD

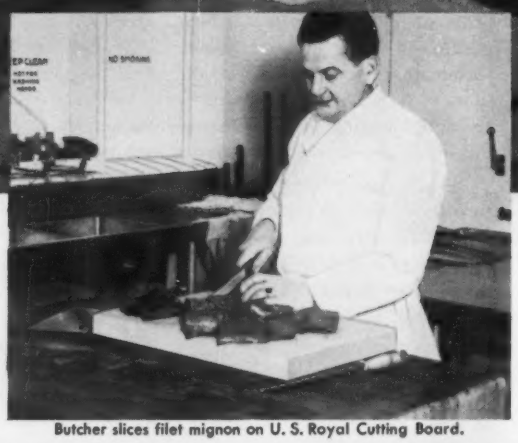
US RUBBER ROYAL CUTTING BOARDS



U.S. Royal Cutting Boards go to sea

Cleanliness is a must with the Dutch. U.S. Royal Cutting Boards, widely used in restaurants, hotels, packing houses and food preparation plants (in fact, wherever food is prepared), have now been adopted by the Holland-America Line throughout all its famous kitchens and dining rooms, including its great new flagship, Rotterdam.

These boards, unlike wood, never splinter, warp, never harbor food particles and bacteria. They are easily cleaned and kept clean with merely a cloth. In addition to guarding the health of patrons, "U.S." Cutting Boards keep owners happy, keep health inspectors pleased, and save thousands of dollars in eating places throughout the world.



Butcher slices filet mignon on U. S. Royal Cutting Board.

• • •

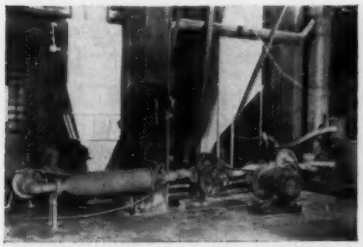
Your U.S. Rubber Distributor is your best on-the-spot supply source. He stocks many sizes of cutting boards to handle your requirements.

US RUBBER Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.



Cooling, Dehumidifying Air Licks Bulk-Flour Problem

One big problem that has plagued flour millers since introduction of bulk handling has been accumulation of moisture on inside of railroad cars. This has necessitated many hours of cleaning and frequent relining of the cars.

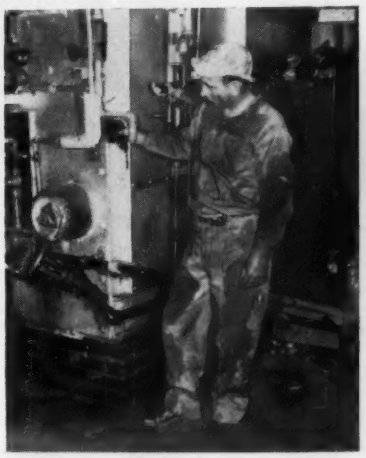
Faced with this problem, St. Louis Flour Mills arranged with Fruin-Colnon Contracting Co., St. Louis, to investigate.

Fruin engineers made a study of loading methods, and examined empty cars on their return to the mill. They found that, during unloading, the warm, moist flour releases vapor that condenses on top and sides of car. Flour dust is then deposited on this moisture, forming a cake on which molds grow. These, in turn, attack lining of car and eventually destroy the lining.

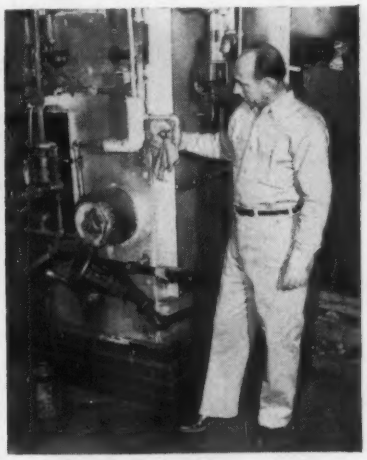
First step in solving the problem was to dehumidify the air just before it entered inlet side of blower in pneumatic system. (Latter comprises two Sutorbilt positive pressure blowers in tandem. Each has 4-in. inlet and outlet, displacing 0.55 cu. ft per revolution.)

Car was completely purged with dehumidified air (25% R.H.), then loading was started. But within 30 min. moisture began to collect on top of car—where exposure to cold (54F.) outside air was greatest. However, these further changes have completely solved the difficulties: (1) Spotting cars in sheltered locations, and (2) cooling the dry air.

Here's how present setup operates: Outside filtered air is drawn through a desiccant-type dehumidifier (right in photo) then blown through water-cooled heat exchangers (left). The cool, dry air picks up flour from an actuating feeder and moves it to the car. A small chiller permits reuse of the water. *—Ben H. Poelker, Chief Eng., and Ben H. Johnson, Ind. Eng., Fruin-Colnon Contracting Co., St. Louis.*



IMPROPERLY DRESSED maintenance man: His dirty, torn clothing could be safety or fire hazard.



PROPERLY DRESSED, this man is far safer. His morale, productivity, and self-respect are raised.

Seven 'Sins' to Avoid For Safe Work Garments

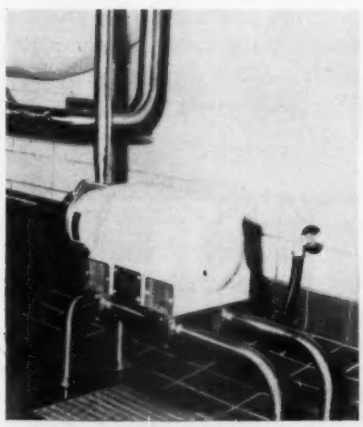
The clothing your men work in often has a distinct bearing on their safety, morale, and appearance. So we have prepared a brief check list of things to look for in proper work garments. Test yourself and see how well your men measure up:

For maintenance men:

1. Dirty Garments can cause skin diseases and rashes, provide a chance for bacteria to infect minor cuts and burns.
2. Missing Buttons can leave a dangling cuff free to catch in moving machinery — possibly pull wearer in after it.
3. Oil or Chemical-Soaked Clothing can turn a workman into a human torch.

For all workers:

4. Cuffs on trousers can catch on projections and lead to crippling falls.
5. Poorly Maintained Garments, such as rips, tears, and missing buttons, are a safety hazard.
6. Loose Belts, Dangling Ties, Fancy or Ill-Designed features on work clothing can catch in machinery, or constitute other hazards.
7. Loose or Ill-Fitting Garments can catch on projections and lead to falls, or get caught in machinery.—*Institute of Industrial Launderers, Inc.*

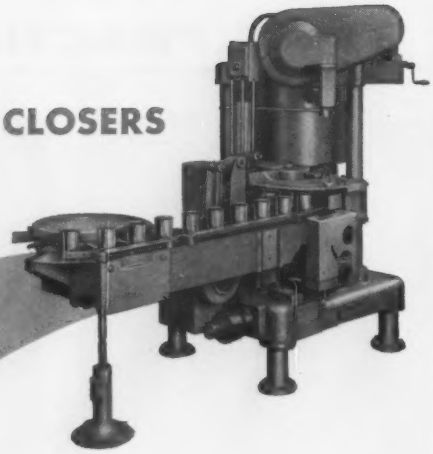


Pipe-Stand Mount Cuts Pump-Maintenance Time

Comes the end of production and you want to take apart pipeline connections (feed and discharge) to clean the pump and replace motor gaskets. Disconnecting pipelines isn't tough, but lining them up for subsequent hookups is.

What you can do to save time and, at the same time, make the task easier for your clean-up crew is to mount the combination pump-motor onto a permanently-installed pipe-type stand (see photo). It comprises a pair of 1-

ANGELUS CAN CLOSERS



KNOWN FOR THE COMPANY THEY KEEP...

KNOWN FOR THE SERVICE THEY PROVIDE

No better recommendation exists than the list of "blue chip" customers who use one or more models of Angelus Closing Machines for efficient and cost-cutting service.

The performance of Angelus Closing Machines is based not only on top-grade materials and quality of workmanship but on the right design to meet specific production problems. These leading canners know that Angelus, the only company in the world producing can closing machines exclusively, devotes all of its design efforts to create equipment for greatest production efficiency and easiest possible maintenance.

Let Angelus put its 50 years of experience to work in solving your can closing production problems. Write today for complete details. Specify products, can dimensions and your capacity requirements.

ANGELUS

Sanitary Can Machine Company

Cable Address "Angelmaco" Western Union Code
4900 Pacific Boulevard • Los Angeles 58, Calif.

Practical Ideas

in. dia. stainless steel pipes, bolted to the floor. Pump's mounted with two pairs of slide bearings to horizontal portion of stand that's about a foot above floor.

Mounted in this fashion, pump-motor can, by tightening or loosening wing nuts, be easily slid toward or away from permanently installed pipes in a minimum of time.

Another feature: Mounting the pump above the floor assures better sanitation, since it's easier to hose down the floor area usually occupied by pumps secured to the floor. —*FE Staff*

PRACTICAL TIPS

Stainless roofing sheets are strong and lightweight, resistant to corrosive effects of fumes and soot. In one case maintenance records showed such sheets, installed above an oven more than 30 yr. ago, are still serviceable.

Retards Chain Wear. Offset sidebar conveyor chains should operate with open end of link forward. Since shaft centers normally are long and speed slow, flexing of chain is less frequent and wear is more likely to occur on head sprocket. (Chain Belt Co., "Rex World.")

Lube Extends Life. Shutdown or inspection period is best time to lube cast chains (pintle, H-Type, and Ley Bushed chains). Swab chains with oil (SAE 30 or 40) at the joint. (Chain Belt Co., "Rex World.")

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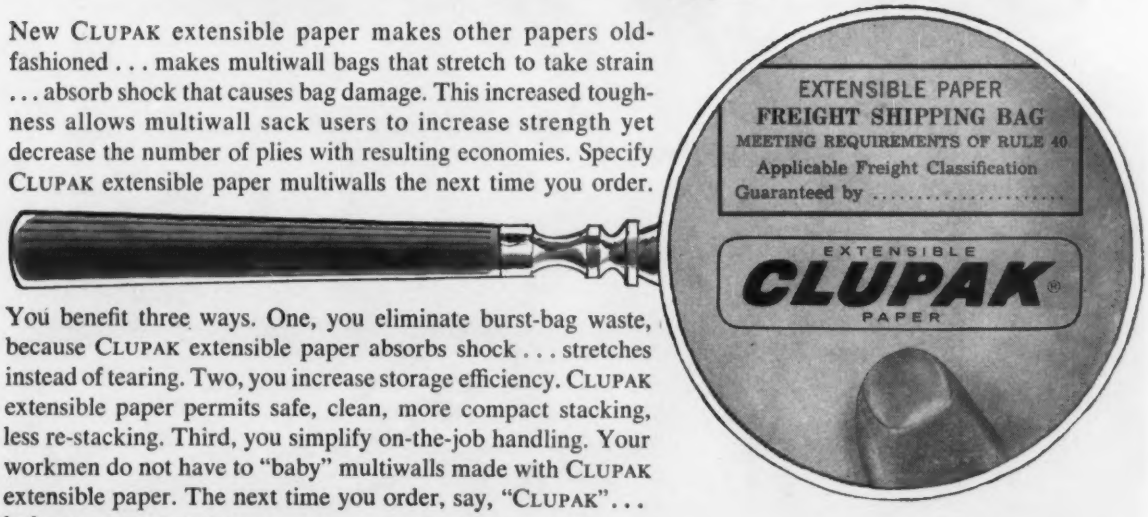
We'll pay $5 to $15 (sometimes even more) for each item used.

Just send us the facts about your idea and its application. And include a sketch or snapshot to show how it works. We'll do the finished writing and drawing for you.

Send your idea today, before you forget. Address it to Practical Ideas Editor, FOOD ENGINEERING, Chestnut and 56th Sts., Philadelphia 39, Pa. —The Editors.

ELEMENTARY...IT'S A EXTENSIBLE CLUPAK® PAPER* MULTIWALL BAG... THAT'S WHY IT DIDN'T BREAK!

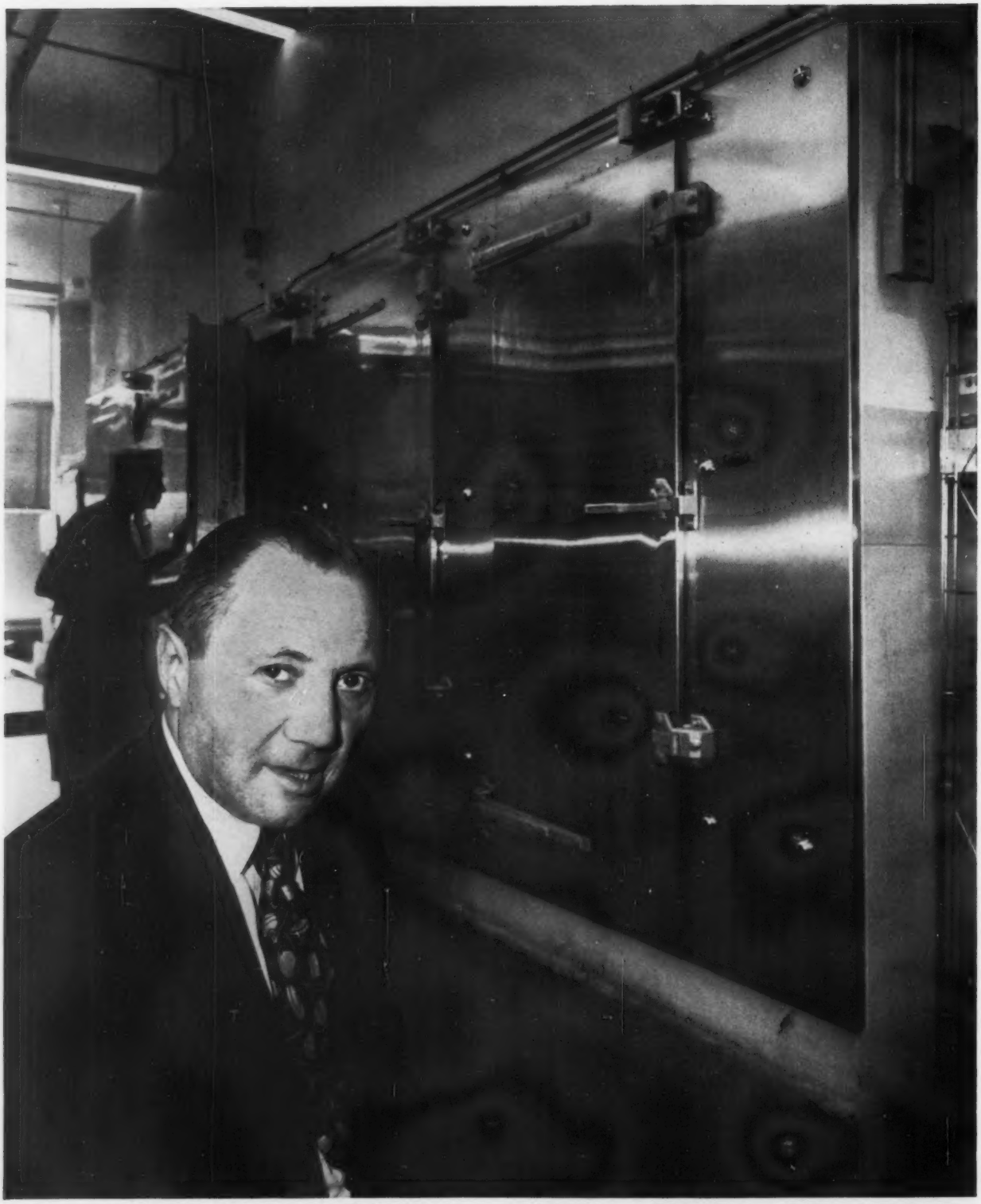
New CLUPAK extensible paper makes other papers old-fashioned . . . makes multiwall bags that stretch to take strain . . . absorb shock that causes bag damage. This increased toughness allows multiwall sack users to increase strength yet decrease the number of plies with resulting economies. Specify CLUPAK extensible paper multiwalls the next time you order.



You benefit three ways. One, you eliminate burst-bag waste, because CLUPAK extensible paper absorbs shock . . . stretches instead of tearing. Two, you increase storage efficiency. CLUPAK extensible paper permits safe, clean, more compact stacking, less re-stacking. Third, you simplify on-the-job handling. Your workmen do not have to "baby" multiwalls made with CLUPAK extensible paper. The next time you order, say, "CLUPAK"... before you say paper.

*Clupak, Inc.'s trademark for extensible paper manufactured under its authority and satisfying its specifications. Clupak, Inc., 530 5th Ave., N. Y. 36, N. Y.

DOW | INSULATION



Mr. Harry Schreckinger, senior partner of Globe Cork, inspects Chock Full O' Nuts' new commissary freezer (background).

CHOCK FULL O' NUTS TURNS OVER ALL COLD-ROOM PLANNING AND CONSTRUCTION TO AN APPROVED INSULATION CONTRACTOR

"Globe Cork Insulation Company—a Dow Approved Insulation Contractor—assisted with the planning and construction details of the new 13,000 cu. ft. refrigerator in our commissary. This freed our own design departments for other work in expanding our coffee plant and bakeries," says Mr. Samuel Ostrove, V.P. of Chock Full O' Nuts, New York restaurant chain.

"Globe also helped plan and build other refrigeration and freezing units in our commissary and in two of our new restaurants. We told them what units we needed and how big they should be. Globe did all the rest—installation and supervision—using Styrofoam® insulation, which keeps our refrigeration rooms at a constant 35° F., and our freezers at an even ten below."

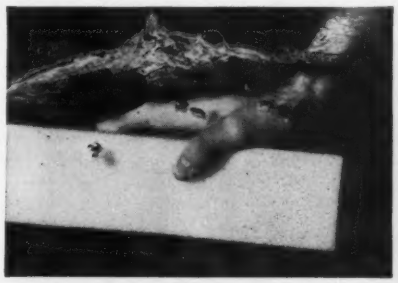
Globe Cork relies on Styrofoam* because this low-cost insulating material is durable, has a low "K" factor that *stays* low, and does not attract vermin—a vital consideration where food is involved. In addition, lightweight Styrofoam is so easily handled that installation costs are minimized.

Styrofoam contains millions of tiny, non-interconnecting air cells which provide high resistance to water and water vapor. Water doesn't penetrate, to freeze, swell and crack the insulation. Insulating efficiency stays high over years of service, regardless of humidity.

The man who displays this seal is a Dow Approved Insulation Contractor. He's one of the special group of low-temperature insulation contractors selected by Dow for their experience and abilities. Each of these contractors has an excellent business reputation, based on high quality workmanship; and each takes great care to follow Dow recommendations for installing Styrofoam.

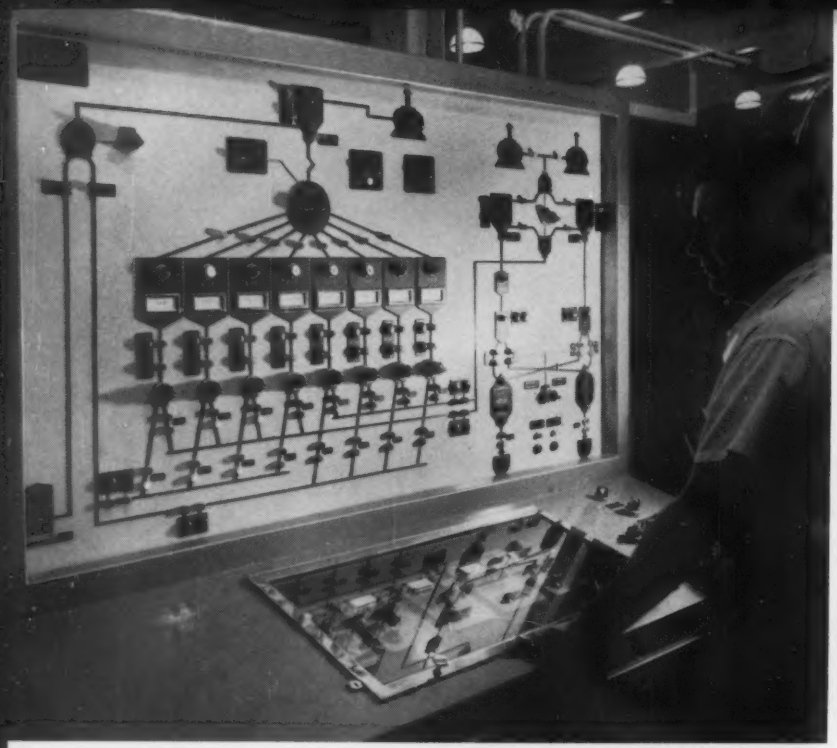
There's an Approved Insulation Contractor near you. Contact him when you next plan to install low-temperature insulation. He'll provide invaluable assistance at every step in the operation. For the names of Approved Insulation Contractors near you, write THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 1641KE8.

**Dow's registered trademark for its expanded polystyrene.*

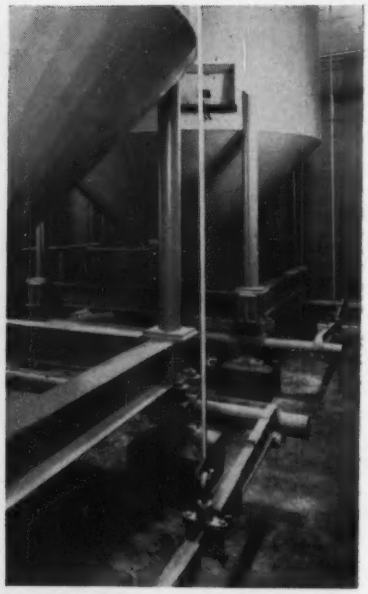


The closed cell structure of Styrofoam controls the passage of heat, water and moisture, providing permanent insulating efficiency. Cold rooms stay uniformly cold, easing the operating load on refrigeration equipment.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN



FROM THIS graphic-panel console, operator selects proper grain formula for mash, also controls flow from storage bins to weigh hoppers to mash kettles.



TWO 12,000-lb. capacity hopper scales weigh milled grains in proper proportions pre-selected at control panel. (Howe Scale photos.)

Newest Handling Success Story

KEEP MOVING AHEAD in manufacturing technology.

That's a "must" for any company that wants to stay competitive—and maintain profits. It's especially true in the brewing of beer, where competition is particularly strong.

One of the best ways to move ahead, according to executives at Anheuser-Busch, Inc. (St. Louis) is to keep methods modern. That's why operating executives are continually seeking cost-cutting potential in new equipment and designing much of their own process systems. A case in point is the automatic grain-handling system installed at the newest of the company's forward-looking breweries (Tampa, Fla.).

The new grain-handling system designed by A-B engineers automatically monitors flow of rice and several varieties of malt from unloading cars, through storage bins and mills, and into scale hoppers feeding cookers.

JOHN V. ZIEMBA
Senior Associate Editor, "Food Engineering"

Benefits Galore

And, according to Engineering Department's John Mueller, it has paid off handsomely, by:

. . . **Assuring production of more uniform quality beers.** New system's so foolproof there's no chance of human error in sequence-scaling of grains to process.

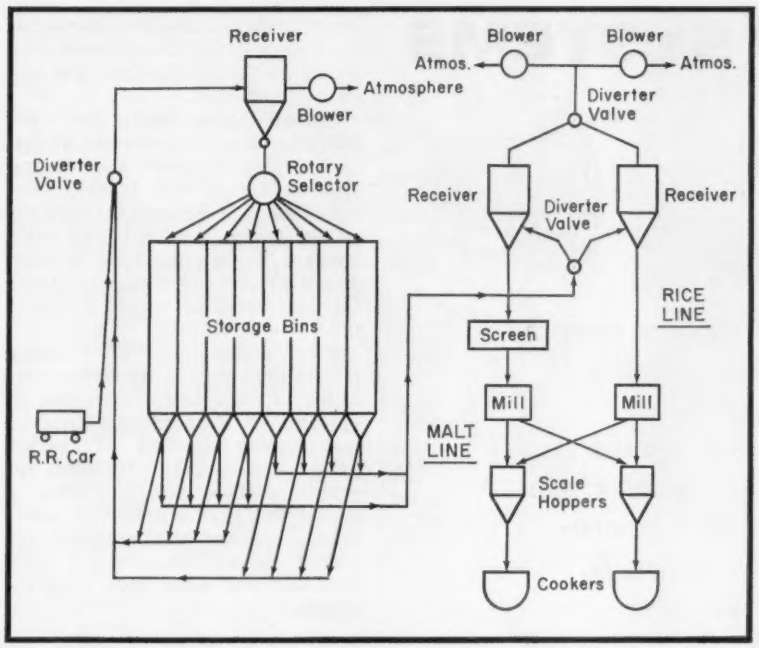
. . . **Maintaining entire grain-handling area in top sanitary condition.** The system's interlocked with dust - collecting facilities (Day), and will not function unless dust collectors operate. Moreover system's under negative pressure, which confines grain dust and keeps areas dust-free.

. . . **Simplifying the task of keeping the pneumatic grain-conveying system (Dracco) clean and sanitary.** Actually, system's fully enclosed and of sanitary design. What's more, when it automatically goes on to purging cycle, it's self-cleaning.

. . . **Providing complete control of grains in storage and in process.**

. . . **Making records available for rechecking and for accounting.** Both scales' weight printers maintain dual records of each batch of ingredients scaled into cookers on double paper rolls. Each time grains are ground into the scale hoppers to make a brew, weight records are torn from outer roll for brewmaster's review. Other roll of printed weights winds up in unit for future reference. Checking weight records at regular intervals gives production department complete up-to-date production and inventory figures.

. . . **Providing better services to brewhall operator.** For example, he now has faster service with malts and rice always on hand—scaled and ready for feeding into cookers. Formerly when operator urgently needed a certain variety



FLOW DIAGRAM shows advanced grain-handling system at Anheuser-Busch's new Tampa, Fla., brewery. Grains are pneumatically conveyed from RR cars and into storage bins, from which they are either circulated from one bin to another or discharged into separate rice and malt mills. Scale hoppers charge cookers.

Your ingredient-handling problem will look easier when you see how Anheuser-Busch's engineers solved their "impossible" problem. Now, grains are automatically unloaded from cars into storage, then milled for scale batching into cookers

of malt to complete a brew, he sometimes had to track it down. Now he doesn't have to rely on others.

. . . Offering greater flexibility in handling of grains. This is of primary importance for it means that one operator can:

1. Unload R. R. cars into storage bins.
2. Recirculate grains from one storage bin to another for controlling moisture content and avoiding possibility of spontaneous combustion.
3. Use same recirculation system for fumigating.
4. Run grains out of storage bins and prepare them (by milling and scaling) for brewing.
5. Unload cars and fill storage bins while milling and scaling grains for cookers.
6. Do two jobs at once by bin-to-bin recirculating while milling and scaling.
7. Switch flows of rice or malts from their respective mills to each other's scale hopper.
8. Scale, in sequence, up to five grains—one rice and four malt varieties—into one brew batch, as required.
9. Change, with flick of switch, from automatic to manual operation of complete system.

The only element of inflexibility in the system is its inability to unload cars and load bins while, at the same time, recirculating grain from one bin to another.

When Anheuser-Busch's new Tampa brewery was in the drawing-board stage, the new grain system was just a gleam in the eyes of its engineers. However, they decided that the optimum grain-handling system would have: First, complete air-conveyorized movement (up, down, sideways) of grains from receiving through storing to processing. And sufficient controls from a console-type graphic panel to permit top-efficient ingredient handling—including sequence-batching of enough grains to make one brew at a time all day long.

Easy Handling

As shown in the flow diagram, all basic grain handling is pneumatic and pushbutton-controlled at graphic panel.

From car to storage bins, grains are pneumatically conveyed by 75-hp. blower into tight concrete storage bins (16 x 50 ft.). In this movement, grains proceed, in order, through a 2-position diverter valve (for unloading and recirculating), receiver (with cyclone and bag collector), rotary feeder at receiver discharge and "octopus"-type rotary bin feeder. Permanent magnet in pipeline to bin feeder picks out foreign metals from incoming grains.

Bin into which grain's to be fed is selected by flicking a switch on graphic panel board. A motor then drives a rotary tube within octopus feeder to line it up with discharge spout feeding selected bin. When both are properly aligned, a microswitch is energized to interlock feeding system, and a bin-numbered pilot light goes on. Blower then starts pneumatic unloading of grain from car to bin at a rate of 25 tons per hr. When bin's full, a high-level controller (Binatrol) automatically shuts off pneumatic system (stops blower and rotary feeder).

To circulate grains, operator stationed at graphic-panel console flicks selector switches to remotely operate diverter valve (from "unload" to "turn" positions) and select bin into which grain's to be circulated. He then jabs pushbuttons to open slide valve of bin from which grain's to be discharged, and to start blowers and rotary feed valves. Grain is then pneumatically circulated from one bin to the panel-selected one.

To process grains and scale-charge them into cookers at a rate of 5 tons per hr., operator flicks a switch to move another diverter valve to "mill" position and sets scaling weights on five digital-type ingredient selectors (Howe). Pilot lights go on, indicating system's set for sequence milling and scale-batching up to five ingredients into brew kettles in sequential order.

For example, let's assume that the automatic cycle's set to screen and mill malt to scale No. 1 and mill rice to scale No. 2 (or reverse). Operator punches a push-button that opens malt bin's slide valve; starts blower (10 hp.), cyclone-type receiver, rotary feeder, sifter and mill; and opens slide valve into proper scale hopper.

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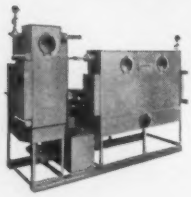

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When scale reaches pre-set weight, bin's slide valve is automatically closed, entire system's purged and weight's printed.

System's now ready for rice. Diverter valve is now automatically lined up to start the milling and scaling of rice from pre-selected storage bin and through receiver, rotary lock, mill and scale hopper. Sequencing then is completed, system automatically resets for next cycle of sequence batching.

Pilot lights on wall-mounted panels indicate full or empty condition of scale hoppers as well as opening of hoppers' slide valves for gravity feeding of scaled grains into cookers. Brewhall operator charges milled grains, a scaled batch at a time, by push-button opening pneumatically operated valves. Green pilot light tells operator when scale hopper's empty.

Some of the Safeguards

System's interlocked with all elements it controls so that any operation, if necessary, can be stopped.

Operating efficiency is further insured by these five elaborate safeguards:

1. In event the automatic system fails, it can be manually operated from the graphic-panel console. Operator flicks switches, jabs pushbuttons, and watches product flow through each operation on graphic panel. When trouble's corrected, he resets pushbutton to put system on automatic, starts up cycle again.

2. Entire grain-handling system is interlocked with dust-collecting facilities which must be operating for system to function.

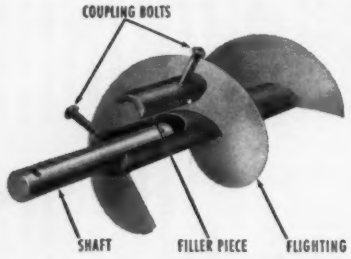
3. Two receivers (on mill side of system) are interlocked with the automatic bag shaker. If shakers don't operate, an amber pilot light goes on and a squawker sounds. At the same time, bin valve's automatically closed.

4. Scale hoppers are equipped with high-level cut-outs (Binetrol). Should something go wrong with the control panel's electro-mechanical system and milled grain rises to high level, system's automatically shut off.

5. Scale hoppers are interlocked with mills to prevent charging milled grains into these hoppers in case they're not emptied or hoppers' valves are open. Wall panel pilot lights (red and green) also indicate open or closed position of scale hoppers' slide valves.—*End*

How Quik-Link conveyor screws

KNOCK DOWN DOWNTIME



HOW IT WORKS — First, coupling bolts and filler pieces are removed from each end of screw section to be replaced. Then the hanger is unbolted, and entire section lifted from trough.

Only LINK-BELT Quik-Link lets you remove a single section without disturbing other components

Here's how you can side-step a serious production bottleneck. Quik-Link offers the fastest method yet of replacing a damaged screw and putting the conveyor back into service. Just a fraction of the normal time.

That's why it's time you investigated the "down-time insurance" built into every section of Link-Belt Quik-Link conveyor screws. Your maintenance men become quick-change artists in no time—a wrench and 30 minutes change the damaged screw section and put the conveyor back to work. What's more, there is no need to pull down the entire line . . . no need to disturb other conveyor components.

Quik-Link is just one of a whole group of Link-Belt screw conveyor components that are cutting maintenance and power requirements to the bone. For full facts call your nearest Link-Belt office or authorized stock-carrying distributor. Or write for Book 2989.

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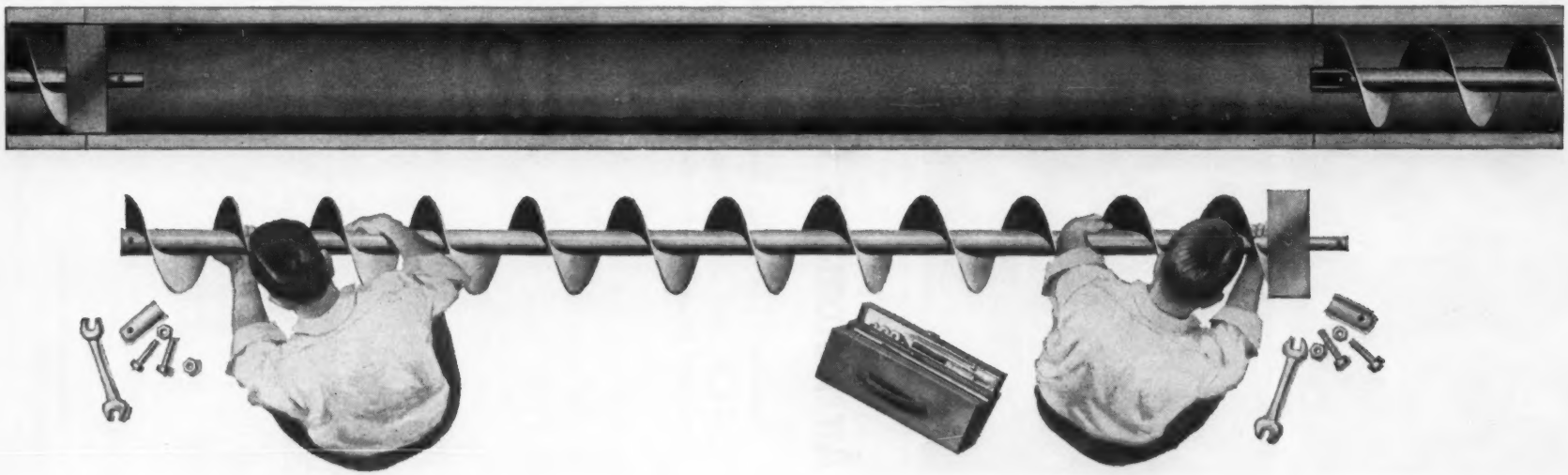
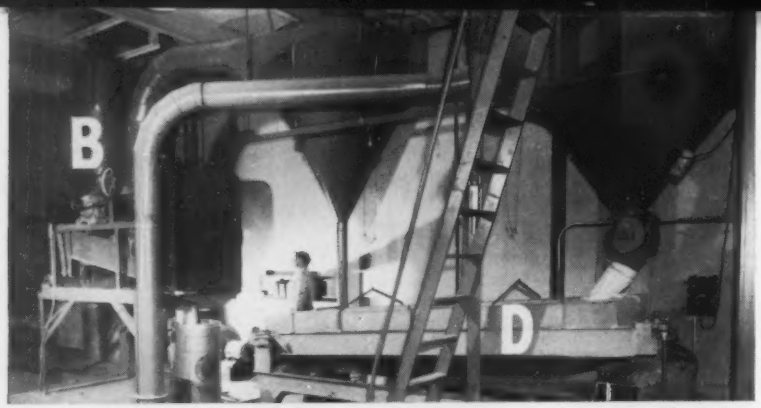




The "How" of Up-and-Down Processing

OPERATION BEGINS with scalping and crushing gum to coarse powder at (A). Then product is elevated to air cleaner (B), drops to pulverizer (C) where it is milled to fine powder. Moved again to upper floor, powder is sized in rotary sifter (D), falls into blender (E). Final step is packaging blended product in drums for shipment.

Air Automates Gum Process

Three-level conveying system is integrated with processing units to oust manual handling, ease sample taking, aid product separation in new 4,000,000 lb. per yr. plant

FLEXIBILITY and better control of quality are major benefits of the new automatic milling and processing system employed by Meer Corp., North Bergen, N. J., in preparation of gum arabic for foods and other uses.

Here raw gum, which is the exudate of the African acacia tree, is processed into six different forms. Four are powders, two are crystals.

Basically, this operation comprises two steps: (1) Cleaning up the raw gum, and (2 grinding, sizing, and blending. In the first step bark, which amounts to approximately 1% of the product, and sand or silica are removed. Second step converts the "tears" of gum into forms suitable for its numerous uses.

In the food industry these are: Production of spray dried flavors, citrus oil emulsion, other flavor emulsions, candies and jellies.

In the manufacture of spray dried flavors gum arabic has many advantages over other products that have been tried. It is a natural substance, so can be used freely in any food product. It is odorless and tasteless, and gives a good, uniform particle size in the finished material. Finally, it locks in flavors, thus preventing losses during drying and storage.

Does Handling Job

In the new facility, a 3-level air-conveying system was integrated with the processing equipment. This makes possible automatic movement of materials from one operation to another, and replaces previous manual handling.

It enables us to bleed off various fractions at any point in the system. And to discharge, at different stages of processing, finished products such as fine and coarse powders or crystals.

Essentially, the system comprises seven major components that perform the milling and processing steps. The scalper (A in photo above) removes foreign matter and other impurities from the "tears" of gum. Latter is then air-conveyed to the crusher which breaks it into a coarse powder.

This is followed by air cleaning (B) to remove light particles such as bark. Pulverizer (C) mills the gum to a fine powder after which an air collector separates air from products. From here the gum is moved to rotary sifter (D) which sizes the finished product.

Process is completed with blending (E) to give a uniform product. This is discharged into containers or drums for shipping to users.

QC Emphasized

First step in the company's quality control program is at the collection depots in Africa, where a Meer inspector checks each lot of raw gum before it is shipped. Still another representative inspects its condition when it arrives at pierside in this country. This is to insure that, among other things, the gum has not absorbed off-flavors or odors from cargos in the hold.

If product passes both tests it is shipped to the North Bergen plant, where the official sample is taken. From that point, every step in testing and processing is recorded on a unique control form, then checked against a laboratory standard.

In addition to the U.S.P required tests for solubility, total and acid-insoluble ash, we run tests for mesh size and clarity. Only when a shipment has passed every required test is it accepted for processing into crystal or powdered gum arabic. —End

GEORGE MEER, JR.,
Technical Director, Meer Corp., New York City

LEAVING HUMAN MESSENGERS far behind, order-filled communication cylinders—like one held here—are literally rifled through air tubes to remote working stations in CP Argo plant. Cylinder-sending orifice is in bulge of tube behind station-control board. At right is cylinder-receiving sleeve.

Zips Orders by Tube, Licks Lag

Corn Products' paperwork is double-quicked as vital shipping-billing forms and 'rush' memos are sped by pneumatic-cylinder carriers through plant. System also streamlines clerical staff routines

INTRA-PLANT COMMUNICATIONS are primary in controlling overall company operations. But considerable losses in time and money can be incurred when they're handled with sub-par efficiency.

Corn Products Refining Co. met this problem at its Argo, Ill., plant by installing an automatically controlled pneumatic tube system to handle vital order papers and 'rush' messages.

Today, paperwork for a typical rush order is transported for processing in one-third the time expended using the old messenger service.

Additional benefits are faster customer delivery, a reduced messenger staff, and better utilization of clerical and supervisory personnel.

Previously, messengers carried all intra-plant communications on an hourly schedule. Thus, considerable time was lost in the build-up of between-trip delays entailed in processing orders through production, warehouse, and quality control departments into the shipping-billing office. After supervisors had completed authorization and placed the items in the particular department's production schedule, the messenger had long since left, holding up the process until the next carrier appeared. And if foremen moved orders, valuable supervisory time was wasted.

Equally damaging, the messenger service meant hourly deluges of rush material, increasing the possibility of errors. Then, there were stretches of time after orders were completed when the office workers would have little to do. In short, the routine "peaked" activities and wasted time in between.

Knocking Out the Peaks

With the new tube system, delays are past history. Peaks and valleys in clerical volume have been smoothed out, and the reduced pressure has bettered efficiency, improved morale.

CP officials estimate that a typical rush order, formerly requiring 180 min., is now processed in only 54 min. using the pneumatic tubes. Routine-order time savings are smaller, but still substantial.

Licked in addition is the old problem of a chronic lack of messengers — created by promotions and military service. A few messengers are still used to link points not served by the tubes. But the quota is easily filled.

The system has also contributed in making receiving and shipping routines more efficient. Truckers now check in for shipping papers at a new office located handy to the plant entrance — saving an average 30 min. of travel over 3 miles of congested plant streets to inside shipping-billing office. It was incorporation of a tube link for speeding papers from billing office to outer station that made new short routine feasible.

Rail shipments are also sped. Carloads are now dispatched from several hours to a day earlier than in old system—faster shipments that mean more satisfied customers.

How System Works

The pneumatic communication setup, supplied by Lamson Corp., Syracuse, N. Y., has a total tube length of 3½ miles. It consists basically of 4 loops with 19 stations—of which 15 can both send and receive cylindrical carriers, and the remaining 4 stations can send only.

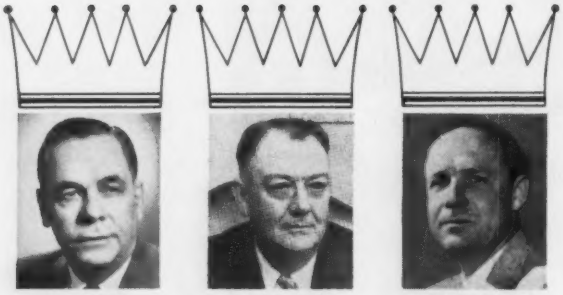
All loops converge at an "automatic monitor" so that message carriers can be carried from one loop to another. This device eliminates the need to route messages manually, a drawback of older pneumatic tube systems.

Cylinder travel time, depending on distance, ranges from 2-5 min. The air-propelled carriers can hold up to 1½ lb. of material.

Corn Products specifically assigns the tubes for mail, incoming teletype messages, and shipping orders. But such items as blueprints, office forms, and dry lab samples may also be accommodated. Says a CP official: "By cutting down or eliminating delays at a number of points in our order-processing operation, we increase utilization of personnel and materially improve service to the customer." (Phil Hirsch, FE Correspondent.)

DEPENDABLE

"Kings of the Highway"



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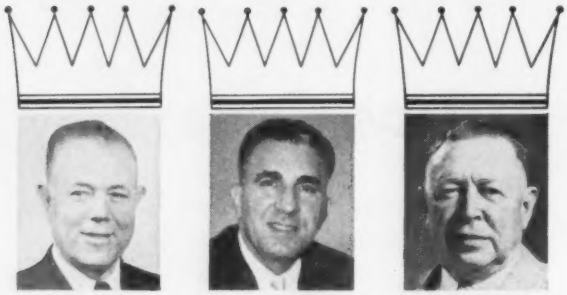

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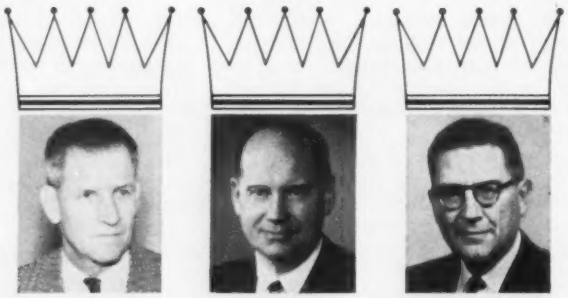

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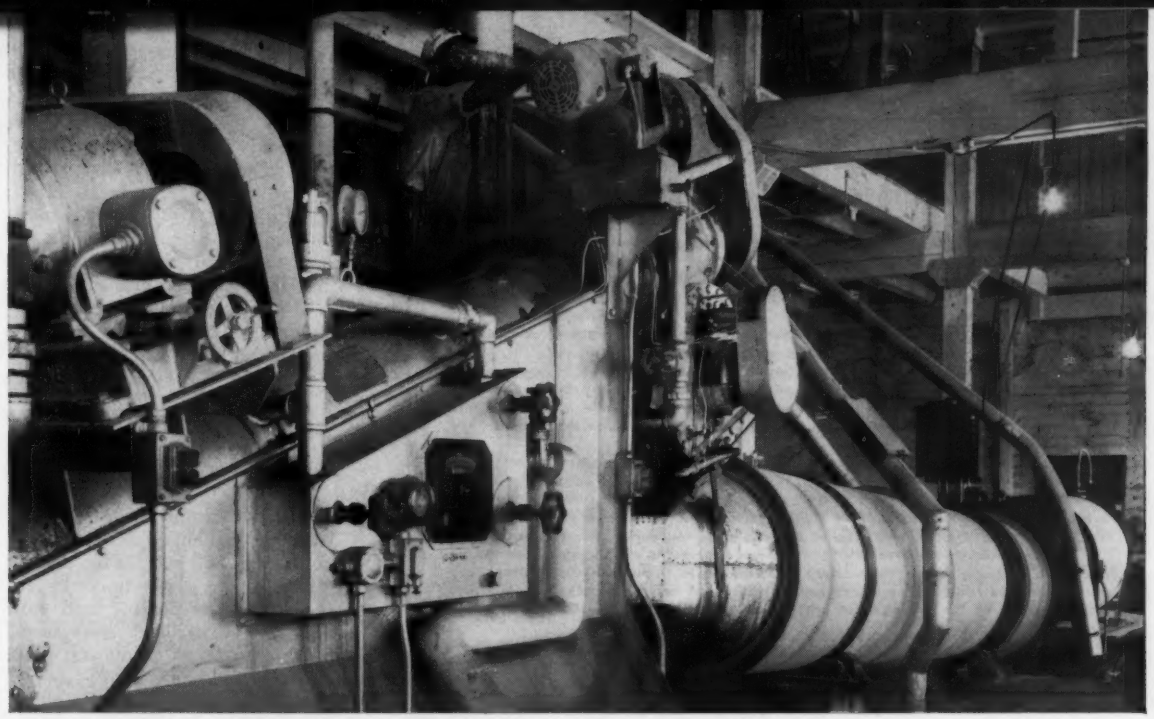


CONTINUOUS PRESSURE STEAMER (left) using 20-lb. steam, gives parboiled grain a 90-sec. cook that gelatinizes the starch, sterilizes the product. Processed grain discharges to gas-heated dryer (right).

Modern Process Revamps Ancient Food

Continuous pressure cooker converts surplus wheat to "bulgor", a nutritious cereal of biblical days

CONTINUOUS, straight-line processing of grain enables Fisher Flouring Mills Co., Seattle, to produce at 100,000 lb. per day the modern version of a food eaten at the dawn of civilization.

And key to one-man operation of the $250,000 plant is a highly efficient continuous pressure cooker (Transol) developed by Food Machinery & Chemical Corp., San Jose, Calif. The unit rapidly gelatinizes the grain's starch and sterilizes the product.

As for the "new" product itself, Fisher calls it "Ala," but its original biblical name was "bulgor." Revival of this food resulted from the milling field's major problem on the Pacific Coast — surplus wheat. Because of favorable climatic and soil conditions in Washington and Oregon, wheat is the principal harvest. However, the US does not consume more than half the crop, so the remainder goes to storage.

Fisher assumed the task of determining whether Ala could be produced both for domestic consumption and overseas shipment. Experimental production was begun in 1954, when USDA allocated 500,000 bu. of soft white wheat for the program. Also cooperating in the project were the Oregon Wheat Growers League and the Washington Wheat Growers Assn.

Production rose from 2,000 cwt. in '55 to 51,755 cwt. last year, and to 33,069 cwt. to mid-summer of this year. Manufacturing techniques developed at the Fisher plant are now available under license to the milling field.

FROM immersion-type washer, grain is conveyed to first of three conditioning tanks.

For High-Speed Continuous Processing— Latest Pressure Steamer

Originally introduced as a pressure feeding device (FE Nov. '57, p. 160), the FMC Transol 120 valve is now an integral part of the maker's Continuous High Pressure Steamer, both at feed and discharge.

Thus, the unit offers numerous applications in continuous processing—cereal cooking, sterilization of starch (99% reduction of thermophilic spores obtained), roasting of soy bean meal, and extraction of coffee.

Protein extraction from bones is particularly efficient, and tests show that such extracted protein is comparable to soy bean protein in amino acid content.

In operation, product is fed to the pressure valve and conveyed to the pressure chamber of the steamer. Here, it is exposed to pressures up to 120 psig, temperatures to 350F., for cooking, sterilizing, roasting or extracting. Exposure is automatically controlled for the specific application. Product is conveyed through the chamber and to the discharge valve.

At pressures up to 120 psig, the unit can convert many batch processes to continuous high-capacity operations. One revolution of the valve delivers 1.5 cu. ft. of solids to or from a pressure vessel. Particle sizes range 4-5 in. Machine is manufactured and approved in accordance with ASME Code Specifications for unfired pressure vessels, and can be made of either mild steel or stainless steel, depending upon the application.

Feed and discharge openings are 9-½" square. Four ports are provided in the valve housing to gradually reduce the pressure within the valve to prevent pocket blast. They are designed to reclaim process gas and/or steam, and return it to the system. Ports may be sealed off for instantaneous pressure drop where the mechanical effect of the blast is desired.

Presently, Ala is used as a meat extender and a rice substitute. Furthermore, many appetizing dishes may be made with it.

How Ala Is Made

The process engineered by Fisher requires clean wheat, of uniform texture, plus proper conditioning. Cooking time in the pressure unit is the critical factor. Drying speed and temperature are controlled to achieve a golden color, while retaining basic wheat nutrients. Processing removes a small part of the outer coat, reduces the grains to fairly uniform size, and lowers the moisture content to 9-10%.

In operation, after the wheat has been thoroughly cleaned, it is conveyed to the Ala production floor and chuted to an immersion-type washer. Latter is fed with a continuous supply of cold tap water introduced as a spray. A screw conveyor then moves the wheat up through an enclosed trough to the first of three steel 780-bu. conditioning tanks.

Steam under 60-lb pressure is introduced into the trough to heat the wheat and increase its ability to absorb water. Conditioning in the three tanks requires a total of 16 hr. During this time, wheat is drawn from the bottom of the first tank and moved by elevator to the top of the second, and similarly from the second to the third tank. Between each tank, temperature of wheat is increased to 200F. by introduction of steam. Water is also added between tanks to increase moisture content to 40%.

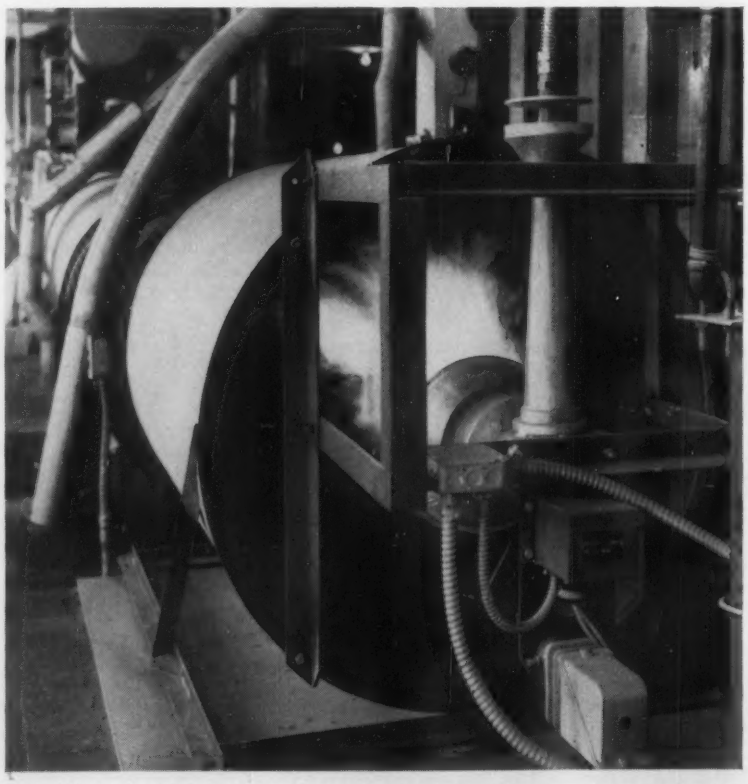
From the third tank, the parboiled grain is conveyed to the continuous pressure stressed cooker, where it is cooked for 90 sec. under 20-lb. steam to gelatinize the starch and sterilize the product.

Material then moves to a revolving drum, specially designed by Fisher, to achieve preliminary drying. The sheet metal drum (4½ ft. dia. x 20 ft. long) is fitted with "flights." They carry wheat to the top and drop it to break up agglomerates in the soft, moist grain. Heated air from a gas flame in a 10-ft.-long asbestos-covered chamber at the end of the drum is pulled through the unit by an 800-rpm centrifugal blower. Residence time in this drum is about 90 sec. at 185F.

Grain then flows by gravity to the first of three column-type dryers (Shantzer), where it is subjected to forced hot air for 3½ hr. A total of 6,000,000 BTU is required to dry 100 bu. per hr. From the third dryer, grain is conveyed to a pearler, for peeling and polishing, then to holding bins feeding two cutters (Simons), for cracking the wheat.

The final step is sifting in a gyrator-sifter (Allis-Chalmers). Perfect Ala—a particle about two-thirds the size of a rice kernel—is released through one spout and the too-coarse grains are routed to a third cutter. It is packed in 1-lb. cartons for domestic use, in 100-lb. sacks, or shipped in bulk overseas.

(End)



COMPANY-DESIGNED revolving drum dryer achieves initial moisture reduction. Hot air from gas flame is sucked through unit by centrifugal blower.

Extensions for More Additives

Latest Listings Include Flavoring Substances

FDA'S LATEST extensions include many flavoring substances and natural substances used in conjunction with flavors. Further, 18 additives categorized as 'direct' and 'indirect' are listed with specified uses or restrictions.

Also receiving stays in time are substances migrating from linings of containers used in food packaging.

For earlier listings, readers are referred to FE Jan., p. 81; Feb., p. 19; Mar., p. 89; Apr., p. 99; May, p. 77; June, p. 85; and July, p. 85.

207 Flavoring Substances Get More Time

The FDA has authorized, effective as of June 9, 1960, for a period of one year from March 6, 1960, the use of the following additives for which tolerances have not yet been established or petitions denied:

Agaric, white; Alkanet root; Aloe; Aloe extract; Aloe, cape; Aloe, cape, extract; Aloin; Althea flowers (marshmallow); Althea root (marshmallow root); Anyris (West Indian sandalwood) oil; Angola weed; "Araucaria" oil; Artemisia (wormwood) (thujone free).

Balsam fir oil; Balsam fir, oleoresin; Beechwood creosote; Benzoin gum (resin); Birch tar oil, refined (rectified); Blessed thistle (holly thistle) herb; Blessed thistle (holly thistle) herb extract solid; Blessed thistle (holly thistle) herb extract; Blessed thistle (holly thistle) herb oil; Blackberry bark extract; Borage; Boronia, absolute; Buchu leaves oil; Buckbean leaves extract; Bugleweed, yellow (groundpine bugle); Bugleweed, yellow (groundpine bugle), extract; Bugleweed, yellow (groundpine bugle), extract solid.

Cabreuva oil; Cade oil (juniper tar, empyreumatic wood oil); Cajeput (cajuput) oil; Calamus (sweetflag); Calamus oil; California laurel leaves extract; California laurel oil; Calumba; Calumba extract; Carmine; Cascara, bitterless extract; Cassie absolute; Cassia fistula (goldenshower senna); Castor oil; Catechu, black, extract; Catechu, black, powder; Cedar leaf oil; Cedarwood, American, white, oil; Centaury (centaurium) herb; Cherry-laurel water (laurocerasus water); Chestnut leaves; Chestnut leaves extract; Chestnut leaves extract, solid; Chirata (chiretta, East Indian balmony); Chirata (chiretta, East Indian balmony) herb extract; Cinchonidine; Cire d'abeille, absolute; Cochineal; Cocillana bark; Copaiba, (balsam copaiba) oil; Cork, oak; "Costus root" extract; "Costus root" oil; Cramp bark extract; Cubeb; Cubeb oil; Cudbear; Cudbear extract; Currant, black, buds, absolute; Currant, black, buds, extract, solid; Currant, black, leaves.

Damar gum; Davana oil; Deer's-tongue (vanilla trilisa) extract; Dittany (fraxinella); Dittany of Crete; Dittany of Crete, extract; Dittany of Crete extract, solid; Dittany of Crete oil; Dock, yellow, root; Dock, yellow, root extract; Dock, yellow, root extract, solid; Dragon's blood.

5 'Directs,' 13 'Indirects' Granted Grace

The following additives may be used in food, under certain specified conditions, for a period of one year from March 6, 1960:

Direct Additives	Limits	Specified Uses or Restrictions
Bithionol and methiotriazamine mixture..	500 ppm. bithional; 100 ppm. methiotriazamine.	In poultry feed as a coccidiostat. Discontinue feed 3 days before marketing the birds to allow for elimination of the drug from edible tissue.
Ethylene oxide.....	50 ppm.....	In dehydrated or freeze-dried mushrooms as residue from use as fumigant. In edible gums, as a residue from use as a fumigant.
Lactic acid esters of mono- and diglycerides derived by glycerolysis of edible vegetable and animal fat.	.....	As emulsifiers in foods in accordance with good manufacturing practice.
Piperonyl butoxide and pyrethrins mixture.	30 ppm. piperonyl butoxide; 3 ppm. pyrethrins.	As residues in dried citrus pulp for animal feed from treating the stored pulp in burlap bags for insect control. Data demonstrates no residues in milk from feeding lactating dairy animals citrus pulp with these additives at or below the amounts listed.
Polyethylene glycols having molecular weights from 200 through 6,000.	.....	As components of coatings or binders for tableted foods, in accordance with good manufacuring practice.

The following food additives as *indirect additives* may be used in connection with the production, packaging, and storage of food products, under specified conditions, for a period of one year from March 6, 1960. The extensions are granted under the condition that a minimum quantity of the additive will be incorporated in the food, consistent with good manufacturing practice. No limits have been specified.

While preliminary data show that many of the substances included in the list may not migrate to foods, these are being included pending the completion of additional scientific work involving them.

Indirect Additives	Specified Uses or Restrictions
Amine, secondary (hexadecyl, octadecyl) of hard tallow....	As a constituent of defoaming agent used in manufacture of food-packaging materials.
Copolymers of styrene and divinyl benzene with added groups: quaternary ammonium, methyl, ethanol (from varying ratios).	As ion-exchange resins used in food processing.
Copolymers of divinyl benzene and methacrylic or acrylic acid (from varying ratios).	
Copolymers of styrene and divinyl benzene with sulfonic acid groups (from varying ratios).	
Copolymers of divinyl benzene and styrene (from varying ratios) with following added groups: Polyalkylamine, copolymers of divinyl-benzene and acrylic or methacrylic acid with added amine groups.	
Starch ether from reacting cornstarch with propylene oxide..	As a migrant from cotton fabrics used in dry food packaging
Monoethanol amine.....	As a constituent of defoaming agent used in manufacture of food-packaging materials and adhesives.
Polyoxyalkylene glycols having molecular weights from 900 through 4,000.	As a constituent of defoaming agent used in boiler water treatment, glue manufacture, and bottle-washing detergent for food processing and packaging purposes, and lubricant for food-processing packaging machinery.
Polyethylene glycols having molecular weights from 200 through 6,000.	As a component of release agents, coatings, adhesives, inks, and plasticizers used in food-packaging materials.
Polyoxyethylene glycol ester of mixed fatty acids from tall oil (average 16 oxythylene groups).	As constituent of defoaming agent used in manufacture of food-packaging materials.
Polyoxyethylene sorbitol hexaoleate (average 40 oxyethylene groups).	
Polypropylene glycol having a molecular weight of 1,200....	

MALEIC ACID, as an indirect additive to food, has had its specified uses or restrictions amended as follows: Not to exceed 0.8% in nitrocellulose-coated, heat-sealing cellophane for packaging foods.

Elder flowers, with stems; Elder tree leaves; Elecampane root; Elecampane root extract; Elecampane root oil; Elemi gum; Elemi oil; Erigeron oil; Eucalyptus leaves; Eucalyptus oil.

Forget-me-not.

Galbanum oil; Galbanum resin; Gambir (catechu, pale); Genet extract; Gentian; Gentian root extract; Germander, chamaedrys; Germander, chamaedrys, extract; Germander, chamaedrys, extract, solid; Guaiac wood oil; Guaiac gum extract; Guaiac wood extract; Guarana.

Hart's-tongue; Haw bark, black, extract; Ho (ho-sho) oil.

Iceland moss; Imperatoria (masterwort); Iva (musk yarrow).

Labdanum absolute; Labdanum oil; Labdanum oleoresin; Lemon-verbena; Lettuce, wild; Linaloe wood oil; Linden flowers and leaves; Logwood chips extract; Lovage; Lovage extract; Lovage oil; Lungmoss (lungwort).

Manna; Maple, mountain, bark; Maple, mountain, bark, extract, solid; Maple, mountain, extract, solid; Meadowsweet, European (spiraea ulmaria); Melilot herb (yellow melilot); Mimosa absolute; Motherwort; Mullein flowers; Myrrh gum and oil.

Oak moss absolute (mousse de chene) and extract; Olibanum oil (frankincense); Opopanax (bisabol-myrrh) gum and oil.

Passion flower herb extract; Patchouly oil; Peach leaves; Pennyroyal (American falsepennyroyal); Pennyroyal (American falsepennyroyal) oil; Pennyroyal (European pennyroyal mint); Pennyroyal (European pennyroyal mint) oil; Pimpinella (pimpernel) root; Pine, Scotch, oil; Pine, white, bark; Pine, white, bark oil; Pine, white, bark extract, solid; Poplar buds.

Quassia; Quassia chips; Quassia root; Quassia extract; Quebracho bark extract; Quillaia extract (soapbark extract, China bark extract); Quinine hydrochloride; Quinine sulfate.

Red saunders (red sandalwood); Rhatany root; Rhatany extract; Rhubarb extract; Rhubarb root; Rosin (colophony).

Saffron, American (safflower); St. Johnswort; Sandalwood (East Indian sandalwood); Sandalwood (East Indian sandalwood) extract; Sandalwood (East Indian sandalwood) extract, solid; Sandalwood (East Indian sandalwood) oil; Saponin, from soap bark (see Quillaia extract); Sarsaparilla bark; Sarsaparilla extract; Sassafras leaves (contain no safrole); Snakeroot, Canadian (Canada wild ginger), oil; Sourwood leaves; Spikenard, American, root; Stargrass (starwort); Storax (styrax) extract; Storax (styrax) gum.

Tagetes (marigold) extract; Tagetes (marigold) oil; Tansy flowers extract; Tansy flowers extract, solid; Tansy oil; Tolu balsam extract; Tolu balsam gum; Tormentilla root; Turpentine gum; Turpentine, steam distilled.

Valerian root; Valerian root extract; Valerian root oil; Veronica; Verain, blue; Vetiver; Vetiver extract; Vetiver oil; Violet flowers.

Wintersbark; Witch-hazel; Woodruff, sweet, herb; Wormseed oil.

Yarrow herb; Yerbasanta; Yerbasanta, fluidextract; Yucca brevifolia extract; Yucca mohavensis root extract.

Additions to Section on Migrating Substances

In paragraph (d) *Substances migrating from linings of containers used in food packaging,* the following subparagraphs are amended to read as follows:

(5) Rosin derivatives, including modification by polymerization, isomerization, decarboxylation, hydrogenation, and methylester of hydrogenated rosin:

(i) Rosin esters formed by reaction with: Bisphenol-epichlorohydrin (epoxy); Diethylene glycol; Ethylene glycol; Glycerol; Methanol; Pentaerythritol.

(ii) Rosin esters modified by reaction with maleic anhydride; ortho-, meta-, and para-substituted phenol-formaldehydes listed in subparagraph (6) of this paragraph; phenol-formaldehyde.

(iii) Calcium rosinate (limed rosin); zinc rosinate.

(1) Polyester resins (including alkyd type) formed as ester of acids in subdivisions (i) and (ii) of this subparagraph, by reaction with polyhydric alcohols in subdivision (iii) of this subparagraph:

(i) Polybasic acids: Adipic; Dimerized fatty acids derived from oils listed in subparagraph (1) of this paragraph; Fumaric; Isophthalic; Maleic; Orthophthalic; Rosin-maleic acid adduct (petrex acid); Sebacic; Terephthalic; Trimellitic.

(ii) Monobasic acids: Benzoic; Fatty acids derived from oils listed in subparagraph (1) of this paragraph; Rosins and rosin acids (see subparagraph (5) of this paragraph); Tertiary butyl benzoic.

(iii) Polyhydric alcohols: Diethylene glycol; Ethylene glycol; Glycerol; Mannitol; a-Methyl glucoside; Pentaerythritol; Propylene glycol; Sorbitol; Trimethylol ethane; Trimethylol propane.

Additional items added to following subparagraphs:

(8) Allyl ether of mono-, di-, or trimethyl phenol.

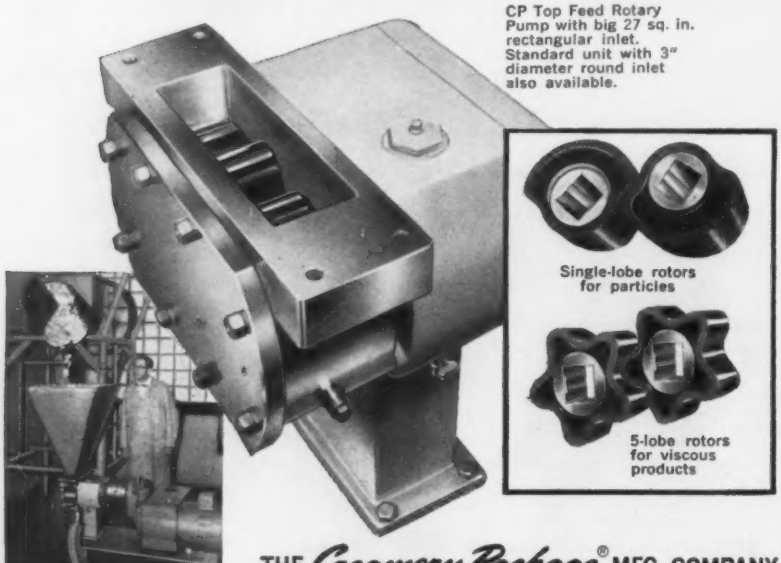
(14) Methyl-ethyl-butyl or octyl esters of acrylic acid copolymerized with acrylonitrile.

(25) 18, 19, and 20 carbon alkyl amides.

New subparagraph (29); Dimethylpolysiloxane.

Later FDA rulings on additives, including Trace Minerals in Animal Feeds, will appear in future issues of FOOD Engineering.

NEW TOP FEED ROTARY PUMPS
with exclusive resilient rotors
for viscous product handling



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CP Rotary Pump with rectangular inlet in service at a meat packing plant. Rectangular inlet has flange tapped to receive hopper.

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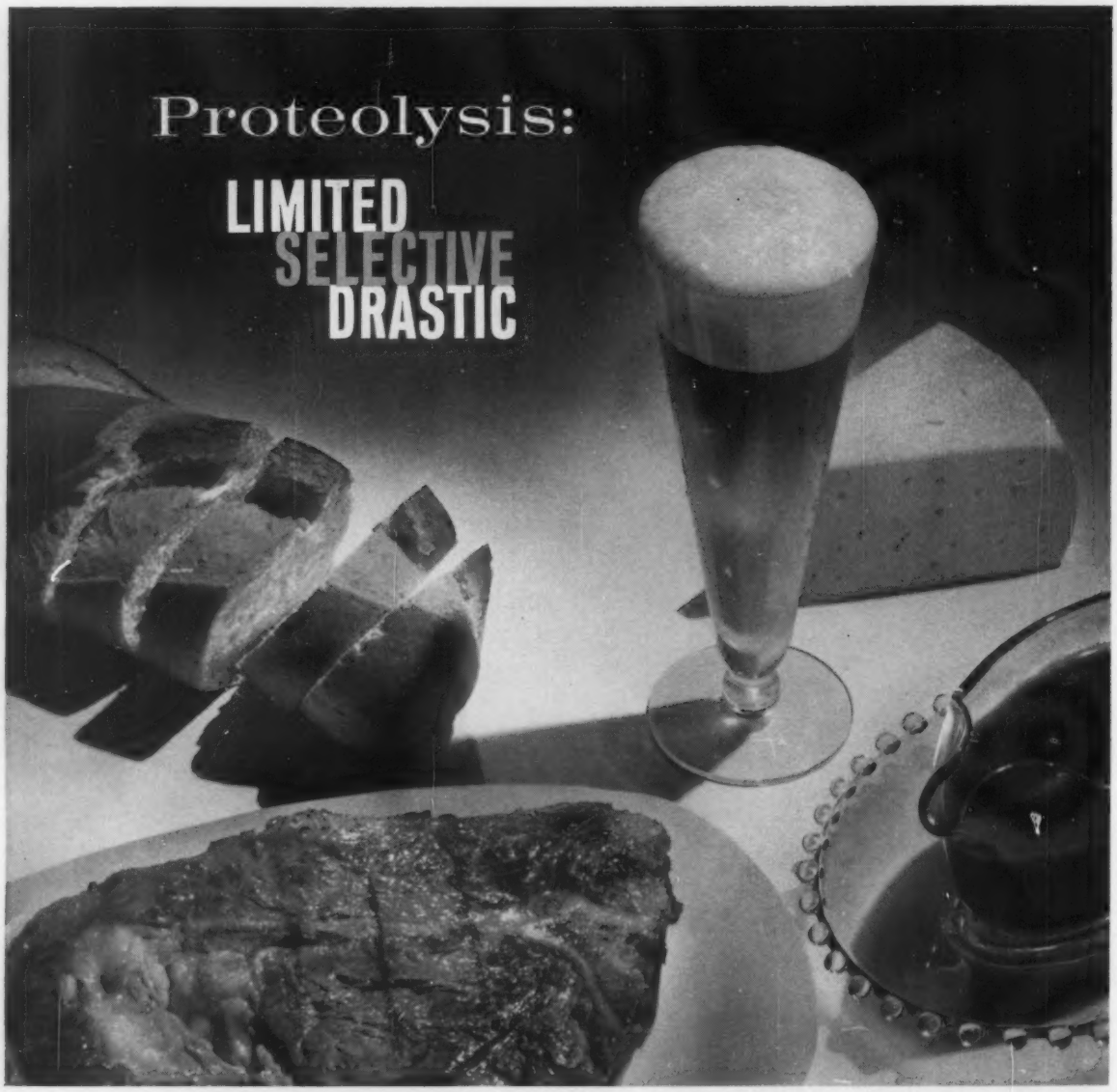

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Evaluation Stabilizing Effect of Glutamate

Monosodium glutamate at 0.15 or 0.35% did not prevent or delay off-flavor development at 10F in fried chicken held 4 months; turkey a la king, 9 months; raw turkey, 9 months; or pork sausage, 4 months; or in pork sausage held 4 months at 20F. Nor did it retard peroxide development at 10F in fried chicken held 1 year; turkey a la king, 15 months; uncooked turkey, 9 months; or pork sausage, 9 months; or pork sausage held 6 months at 20F.

The presence of glutamate neither prevented peroxide development nor did it mask the flavor changes that occurred.

No loss in glutamate content was found in chicken broth, cream of chicken soup, or green beans subjected to commercial canning conditions. No flavor differences were detected between two samples of chicken broth or cream of chicken soup prepared by adding equal amounts of glutamate before and after canning, respectively.

Glutamate, stable to heat processing, does not affect the usual processing changes in the product as judged from this study. Thus, addition prior to canning is indicated to assure uniform distribution, especially in heterogeneous products. — *Food Tech.*, 328-32, July, 1960.

Improvements in Spray Cleaning Technique

Obtaining maximum benefits from spray cleaning requires: Setting up an efficient system, proper procedures, and effective products. Benefits obtained from spray cleaning are: Invaluable aid to quality control, cleanup personnel benefited by elimination of hazards of manual cleaning, and increase in production.

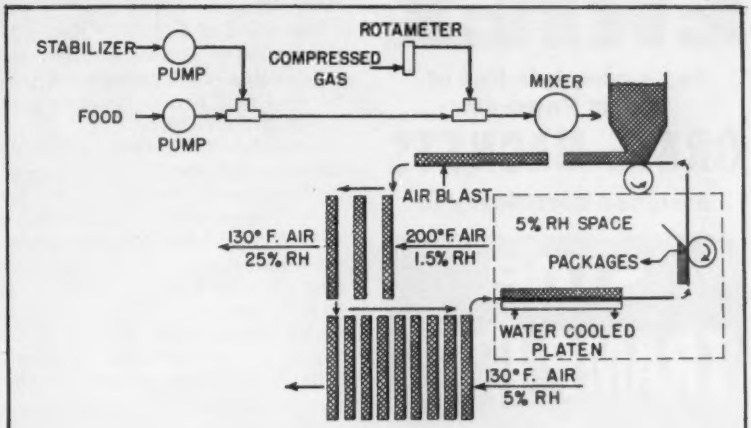
Components of a spray system include: Spray units, connecting lines, pumps, solution tank, and controls.

Fixed or rotating, permanently installed or portable units are available. Permanent metal or plastic connecting lines or beer hose can be used for connections. Pumps can be movable or permanently placed. Solutions can be prepared either in separate solution tanks or directly in equipment being cleaned.

The choice of product used is dictated primarily by the type of surface. Types of products include: Strongly alkaline, moderately alkaline, moderately alkaline chlorinated, and acid type materials.

While beerstone can be avoided once spray cleaning has been instituted, removal of old beerstone deposits left by incomplete manual cleaning may require special measures. In many instances use of the spray cleaning product at a higher strength and at higher temperature if convenient, will soften old beerstone so that it can be easily brushed off.

Features which will expedite in-place cleaning should be incorporated into the design of new equipment.—*Paper by J. R. Greenfield*, presented at Amer. Soc. Brewing Chemists Convention, Minneapolis, May 1960.



A SCHEME OF CRATER FOAM-MAT DRYING

Improvements In Foam-Mat Drying Result From Perforated Plates

A recently devised method, called crater technique, has considerably improved the foam-mat method of drying liquid foods.

In the new method, a layer of foam is spread on a perforated metal tray. A controlled air blast is directed through the tray from below in so that the foam in and above the perforations is spread aside but not splattered off the tray. Drying air is then passed through the perforations until the cratered layer is dry.

In one method (photo) flat 16-gage. All sheets, perforated with 1/8-in. holes on 3/16-in. centers are used as trays. They are loaded with a 1/8-in. layer of foam (30% solids), then moved across a slot through which air (150 ft./sec.) is blown. This air cleans each hole and produces craters in the foam above. Trays are then moved through dryer, where air at 200F. moving parallel to trays at 3 ft./sec. is blown through them. The air flows first through the wettest tray, then through the two preceding ones. Pressure drop is less than 0.1 in. of water, temperature drops to 130F., R.H. rises to 25%.

Trays are then moved to countercurrent section in which dry air at 130F. flows at 2 ft./sec. through driest tray and then through following ones. Dry product containing 2% moisture, is doctored off trays and packed. This produces 6 lb./hr. per sq. ft. of tray.

Several practical schemes have been suggested that would permit continuous and automatic loading of trays, conveying them through the dryer, removing the dry product, and recycling trays to feeder. —*Paper by A. I. Morgan, et al*, Western Utilization Research & Development Div., USDA, Albany, Calif.

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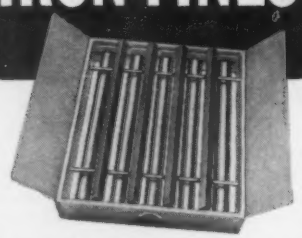

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Advances in Technology

Sterile Fruit-Milk Drinks

Retention of full fruit flavor, no cooked flavor nor coagulation, are outstanding characteristics of fruit flavored milk drinks made by a recently patented process.

Procedure comprises vacuum deaerating and sterilizing milk product (suggested composition 1% fat, 10% solids-not-fat), then cooling to 70F. Flavor base (lemon, orange, lime, strawberry, cherry, root beer, mint) is separately sterilized, cooled to 80F. and metered into stream of cooled-sterile milk. Mixing is obtained as stream flows to aseptic canning unit where drink is filled in sterile cans and sealed.—U. S. Patent 2,924,531, Feb. 9, 1960.

Specific Phages Cut Flavor, Not Acid in Cultures

One of the causes of flavor loss in starter cultures and fermented milk products is selective bacteriophage destruction of *S. diacetilactis*.

This was demonstrated by a recent investigation in which phage specific for *S. diacetilactis* were isolated from cottage cheese whey in several commercial dairy plants. Electron microscopy revealed that one of the phages was tadpole-shaped with an over-all length of about 180 millimicrons.

Assays revealed that *S. diacetilactis* produced an average of 5 times more biacetyl in single-strain milk cultures than other bacteria commonly used in controlled dairy fermentations. This organism was combined with one or more strains of *S. lactis*, *S. cremoris*, and *Leuconostoc* organisms in presence and absence of homologous phages for *S. diacetilactis*.

Selective phage-lysis resulted with consequent marked reduction in biacetyl synthesis, but no effect on rate of acid production. This might account for some instances of variation in flavor and aroma of cultured milk products. — *J. Dairy Science*, 755-61, June, 1960.

Residual Solvent Content Of Spice Oleoresins

A simple, reasonably accurate technique for determining the presence of commonly used solvents at levels below 50 ppm. in spice oleoresins has been developed.

General method involves adding an internal standard of benzene diluted in toluene to a 50g. sample of the oleoresin and distilling the toluene into a Clevenger trap.

Benzene is present in a known concentration in the resin, and levels of other solvents are related to it by making a GC analysis of the distillate.—*Food Tech.*, 301-2, June, 1960.

Frozen Food Off-Flavor Not Due to Bacteria

Although bacterial growth always takes place in frozen foods stored at 25F. or higher, and can eventually produce spoilage, off-flavors that initially develop are not due to bacteria. They result from non-microbial enzymatic or chemical reactions.

These observations resulted from tests with 18 lots of peas, beans, cauliflower, and spinach exposed to temperatures from −10 to 40F. Average initial count on samples stored at −20F. ranged from below 10^5 to over 10^7.

Within lots, counts on different packages varied as much as 50-fold. Peas were the most variable. At −10 to 20F. bacterial growth never occurred, but large numbers (usually 50%) always survived. Flavor deterioration occurred in the above temperature range. At 25-30F. bacterial populations doubled in 1-8 weeks.—*Food Tech.*, 290-94, June, 1960.

Higher Extraction, Soya Improve Bread Protein

Nutritional value of bread protein is increased by increasing percentage of extraction, and by addition of soya meal.

This was indicated by rat feeding experiments with breads made of 20 kinds of flour. Flours differed in both extraction rate (74, 82, 86, 90 and 95%) and in percentage of heat-processed soya meal added (0, 6, 9, and 12%). Lysine/g. of N_2 increased in both cases. Threonine increased and methionine decreased with percentage of soya, and both did not change with extraction rate.

When only bread provided the dietary protein, the net protein ratio rose as percent extraction and soya additions rose. But when bread supplied only half of the dietary protein, the other half being derived from casein, neither extraction nor soya improved nutritional value of the protein.—*Food Tech.*, 298-300, June, 1960.

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PLANTS COAST TO COAST

FEWER WORKERS run new packagers that form, fill, and seal pillow-type bags for "Fritos." Previous machines, using pre-made bags, required 3 employees, but new line (left) needs only 1 man per unit (for boxing) and part-time attention from setup man.

Keeps Prices Competitive With

When your product sells for a nickel, dime, or quarter, you have to keep a tight rein on packaging dollars . . . Fast-climbing H. W. Lay exploits new bag-making methods with some touches of its own that get more from packaging budget

HOW WELL you're able to hold competition on price often depends on how effective your in-plant cost controls are. And here the secret lies in taking advantage of new packaging ideas that spark cheaper, smoother line operations.

A case in point is fast-moving H. W. Lay Co., Atlanta, whose willingness to break with old techniques has won impressive savings in packaging and labor costs, plus increased operating efficiency.

Key step was installation of a battery of 12 automatic packagers (Mira-Pak) that fabricate, fill, and seal pillow-type bags.

Because Lay's former setup called for use of pre-made bags, the new equipment eliminates an entire bag-making step. Outside sources say that the switch from pre-made sacks to roll-stock can cut costs as much as 20%.

And there's another significant saving: The seven Mira-Paks used for the Fritos operation require only one girl per unit (for boxing) and part-time attention from a setup man. Previous equipment required three operators per machine—one put the bags on the machine, another fed them to the heat-sealer, and a third packed the product.

Changeover resulted in an approximate 50% reduction in number of workers needed for each packager.

The Fritos units run 16 hr. a day, 5 days a week. Despite this heavy workload, Lay engineers say downtime is about the same as with former units.

Output is 44 bags/min. vs. 60/min. for older machines. New packagers measure Fritos by weight, and pack them in containers ranging from ⅞- to 10-oz. sizes.

Each Mira-Pak used for the corn chips has two separate units—(1) A dual assembly of feeding, weighing, and dumping systems; and (2) the bag-maker.

Product flow from overhead feed conveyor to scale bucket is regulated by a series of vibratory handlers. A level control, which actuates the individual rake-off conveyor, keeps the surge hopper filled with chips.

From the hopper, product is conveyed to a pivoted "spade." When the spade is depressed, power to surge-hopper vibrators is cut off. When weights of the product is removed from the spade, a limit switch reactivates the vibrators, thereby feeding more product from the hopper.

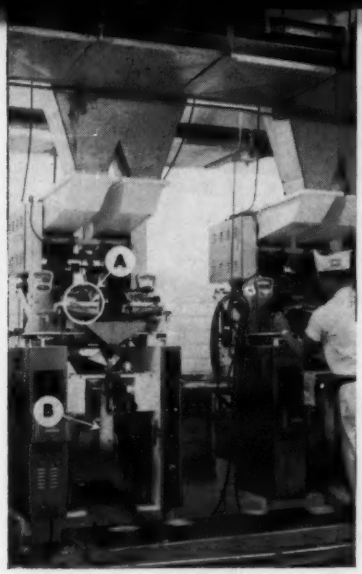
There are two in-line vibratory feeders (each with individual rheostat controls) that feed product to a scale-bucket. For larger packs, the secondary feeder also acts as a dribble feed.

Product Waste Cut

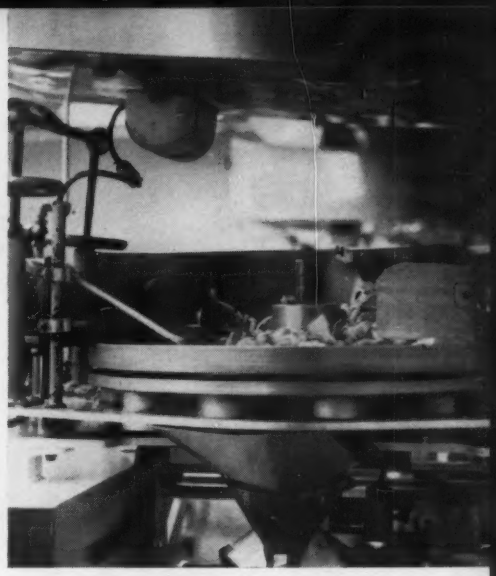
Rate of flow is regulated so that chips move faster in the secondary feeder than in the primary one to provide a uniform, weighable flow to the scale-bucket. Product is chuted from scale-buckets into a common filling-tube, thence into bags.

Loss from over-filling is minimized by placing the secondary feeder's discharge immediately above the scale-bucket. Chips are thus in suspense ¼ to 1¼ in. between the exit point and the top of the load in the bucket when the scale makes weight.

Circuitry is so interlocked that the machine will not make a bag



TWO separate operations involved in new machine are (A) dual assembly of feeding, weighing, and dumping systems, and (B) bag-maker which works from roll stock. Product flows from common overhead conveyor to surge hopper and scale-bucket, then chutes into filling tube and bags.



PRODUCT WASTE is cut by 15-cup rotating disk that drops "Bakon Puffs" into forming tube. Brush levels cups, shunts excess product off onto side of disk.

'Bagged'-Cost Controls

unless one of the two scales is ready to dump. Dumping is alternated so that while one scale-bucket drops its contents the other one waits its turn.

A part of this interlocked circuit is an oscillating, circular cam operated by a common drive that also triggers the reciprocating jaw-frame carriage. As the carriage rises, the cam performs these sequential operations: Closes the switch that operates the air-cylinder dump of the scale-bucket that has made its weight, shuts off primary and secondary feeders, triggers a second switch that closes the sealing jaws on the paper tube to make the bag seams, and closes the electric eye registration reset switch. This last switch opens the jaws at the bottom of a stroke, if the electronic registration has not already opened the jaw.

These switches are arranged on the cam to facilitate rapid, easy adjustment for different bag sizes.

If electronic registration fails to operate properly, machine kicks out improperly made package. Then, on next cycle, with jaws closed, carriage continues to overstroke until electric eye picks up registration marks, re-establishing right bag size.

Ordinarily, it automatically recovers accurate cycling within 1 to 3 off-size bags.

The eye has a 4-5 in. scan in which to pick up registration marks. This wide latitude allows rapid recovery.

Mira-Pak's linear adjustment tailors bags for snug fit around their contents. Here's how this is mechanically achieved.

While clamped in the sealing jaws, packaging material (laminated waxed paper for 5¢ Fritos, cellophane for all other sizes) is pulled from the roll on the carriage's downstroke. At this point, it is a tautly-stretched version of an elongated, pillow-type bag. Before the sealing jaws start their upward stroke, they release the seamed tube.

The paper tube is formed externally (no mandrels needed) as the jaws pull the material over the tube-former and past the back-seam heat-sealer. The scale-bucket's hinged bottom is flicked open by an air cylinder and, when the carriage is at its lowest point, the product drops about 13 in. through the tube. At this point the tube is much like an inverted, truncated cone, the top of which is shaped by the former and the bottom by the jaws.

At the downpoint of the stroke, sealing jaws release both the completed, filled bag, and the bottom seal of the subsequent sack. When the carriage rises, the open jaws shut on the top of the bag, and the cycle is repeated.

The spring-loaded, serrated cut-off knife is recessed in the front, sealing jaw. It is operated by a cam, moving out to cut the bag seam in half as the carriage descends, then returning to its recess.

Other Uses, Too

Four of the Mira-Paks are being used on Lay's "Bakon Puffs." Here, they volumetrically measure and package the pork-skin product in any of 4 sizes (from 5¢ bag that is ⅜- to ½-oz. to the 25¢ package that is 2⅜-oz.).

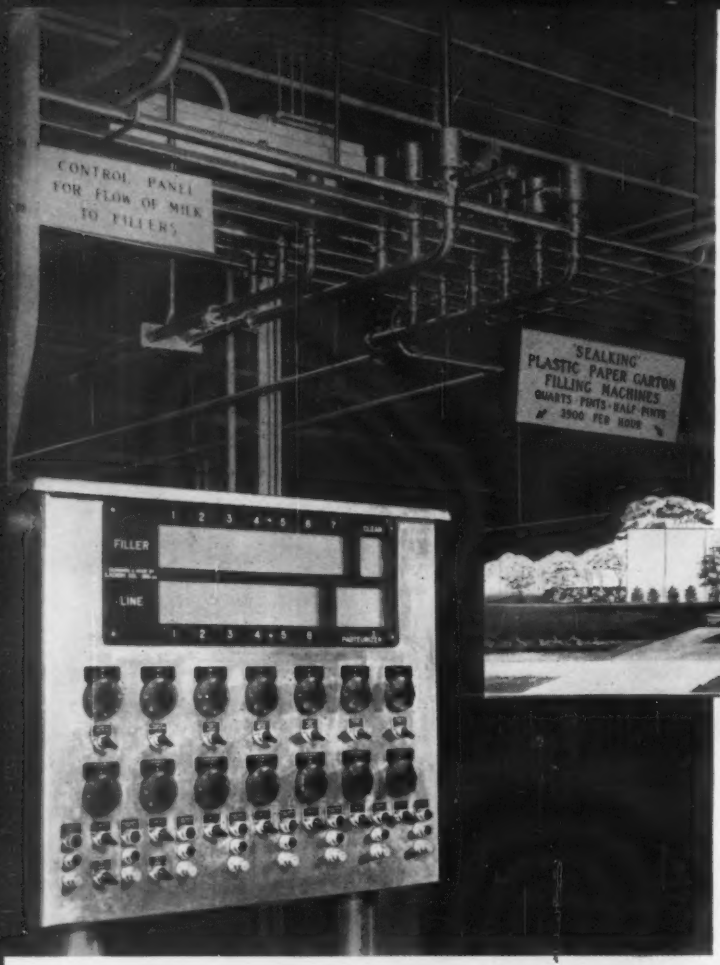
Nature of the product allows speeds up to 54 bags/min. Bag-making is the same as that used for the Fritos, except for a difference in the first phase step.

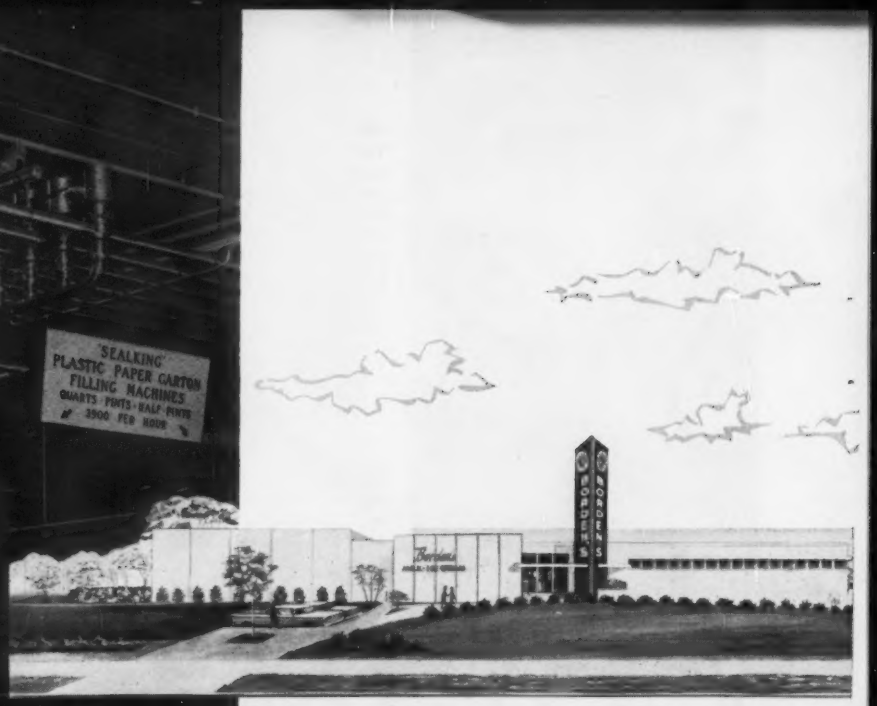
Plows transfer the product from a conveyor into a surge-hopper. A vibrating feeder then transfers the puffs onto a rotating disk fitted with 15 cups.

Product flow to the disk is controlled by a spade located above and behind a brush. Excess product, accumulated as the brush levels the load in each cup, holds the spade up and stops new flow. When the pile of surplus product goes down, the spade is released, and product flow resumes.

The cups are adjusted by moving the top disk-plate up or down —even while the machine is running.

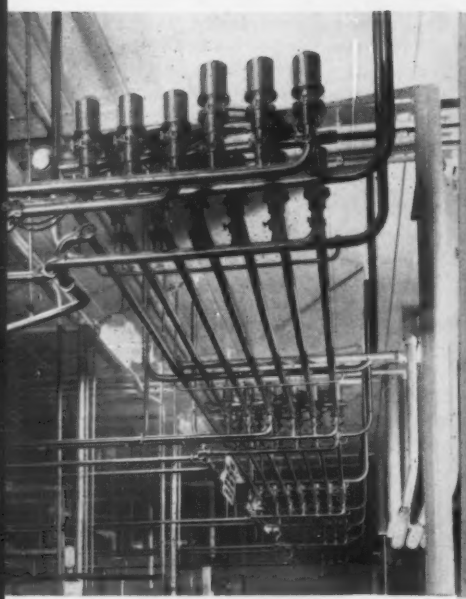
The puffs drop from each cup into a cone-shaped chute that carries each measure of product to



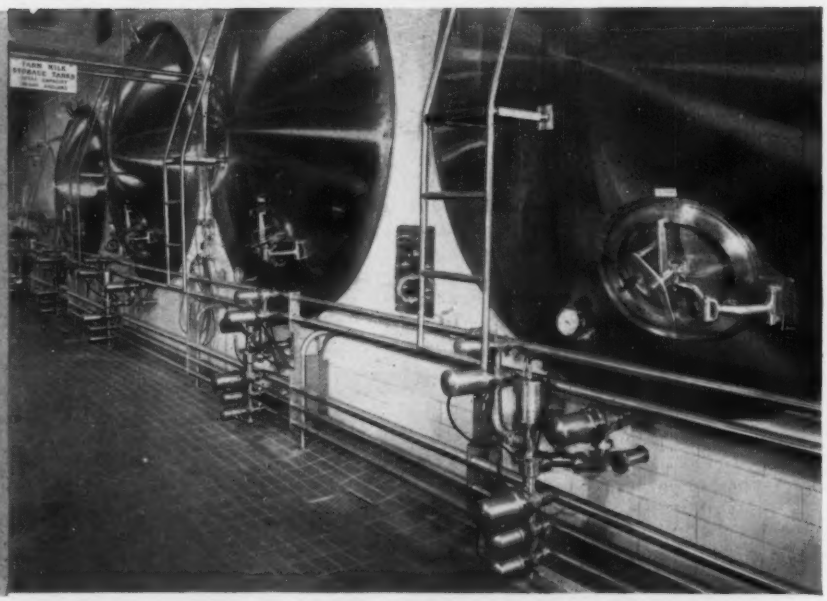


The control center at left automatically controls the flow of milk to fillers. Panel has a projection type digital display unit which shows at a glance exact status of filling operation.

The control panels, air-actuated valves, and valve manifolds are products of Ladish Co. Fesco Division, specialists in the design of automatic control systems . . . and in the installation of air-actuated valves and controls used in these systems.



"Fesco" air-actuated valves are the "heart" of the automatic processing operations. There are 152 of these efficient automatic valves installed in this plant for accurate control of liquid flow.



View showing a group of stainless steel farm milk storage tanks, having a combined capacity of 70,000 gallons. Filling operations, distribution of milk to pasteurizer, and CIP cleaning operations are controlled through seven "Fesco" valves connected to each of these tanks.

TRI-CLOVER EQUIPMENT

helps Borden's "Dream Plant" achieve new standards in Automatic Processing

INSTALLATION "HIGHLIGHTS"

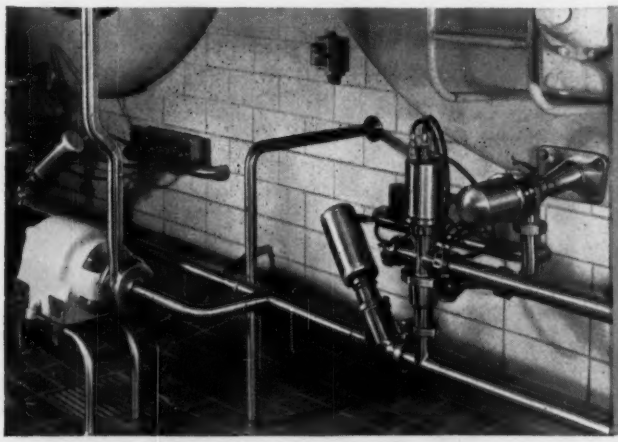
- **110,000 square feet of floor space**
- **Raw milk storage capacity, 70,000 gallons**
- **Can pasteurize, homogenize and cool 35,000 quarts per hour**
- **Capacity to process a half-million quarts of milk per day**
- **Control system utilizes over 30,000 feet of electrical wire**
- **Process lines inter-connected by almost 7,000 feet of stainless steel tubing**
- **Automatic flow control handled through 152 air-actuated valves**

Wisconsin's largest, most modern milk and ice cream plant . . . Borden's *"Dairyland Showcase"* . . . is now in operation. With its processing capacity of 500,000 quarts of milk per day, this amazing plant could supply a pint of milk daily to every family in Wisconsin. It will be able also to produce five million gallons of famous Borden's ice cream per year.

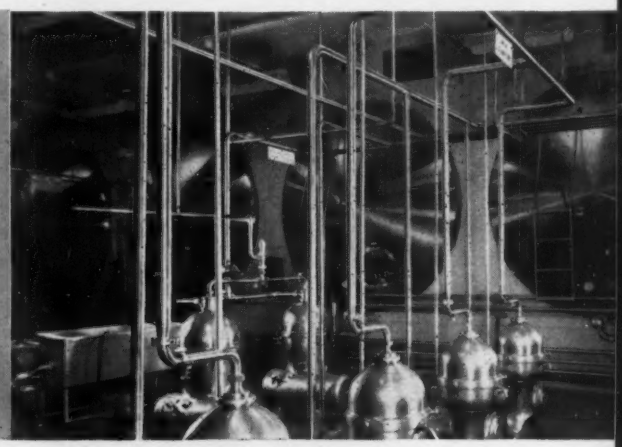
Ladish Co. is proud of the important part played by its Tri-Clover and Fesco Divisions in helping The Borden Co. achieve new standards of efficiency in the modern, automatic processing operations of this Wisconsin "Dream Plant".

The equipment, some of which is illustrated on these pages, was designed, manufactured and installed by Ladish Co. Tri-Clover and Fesco Divisions and includes 152 *"FESCO"* air-actuated valves . . . several modern, practical control panels . . . hundreds of "Tri-Weld" stainless steel welding fittings, welded in place with a "Tri-Welder" automatic welding machine right in the plant . . . numerous Tri-Clover sanitary centrifugal pumps . . . special pipe hangers and supports . . . as well as almost 7,000 feet of stainless steel tubing "Tri-Welded" on the job.

This "Showcase" Plant serves as a most striking example of the way in which the combined engineering ability, design and manufacturing skill of these Ladish Co. Divisions has helped to lead the way to modern automated dairy plant operation. Let this wealth of experience serve you in your next expansion program.



Valve manifold used for filling pasteurizer storage tanks and for transferring milk from these tanks to the filling machines. Also, note the simple, clean and effective method of mounting one of the many Tri-Clover pumps to permit fast, easy removal of the unit from the lines for inspection and maintenance.



"Tri-Weld" stainless steel butt weld fittings are employed extensively throughout this efficient Borden "Showcase" installation. The "Tri-Weld" lines installed above these clarifiers and separators were quickly and economically fabricated right on the job with Tri-Clover's new portable welding machine . . . The "Tri-Welder".

See your nearest Tri-Clover Distributor.

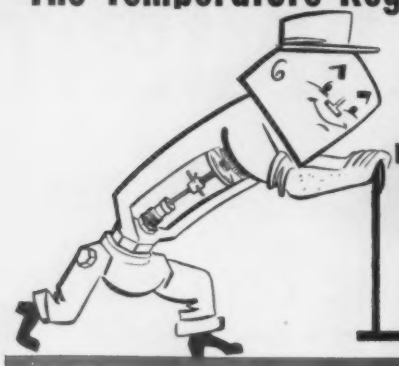
IN CANADA: Brantford, Ontario
EXPORT DEPT.: 8 South Michigan Ave., Chicago 3, U.S.A.

TRI-CLOVER

LADISH CO.
Tri-Clover Division
Kenosha Wisconsin

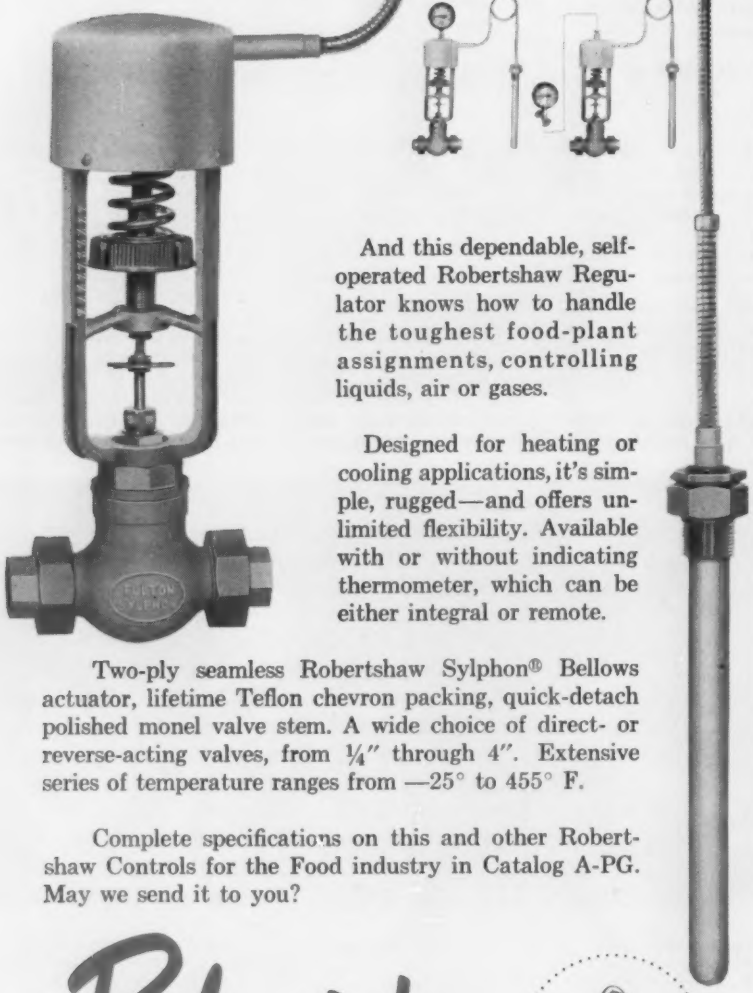
8-500

The Temperature Regulator that



LIKES TOUGH JOBS!

No. 1003



And this dependable, self-operated Robertshaw Regulator knows how to handle the toughest food-plant assignments, controlling liquids, air or gases.

Designed for heating or cooling applications, it's simple, rugged—and offers unlimited flexibility. Available with or without indicating thermometer, which can be either integral or remote.

Two-ply seamless Robertshaw Sylphon® Bellows actuator, lifetime Teflon chevron packing, quick-detach polished monel valve stem. A wide choice of direct- or reverse-acting valves, from ¼″ through 4″. Extensive series of temperature ranges from —25° to 455° F.

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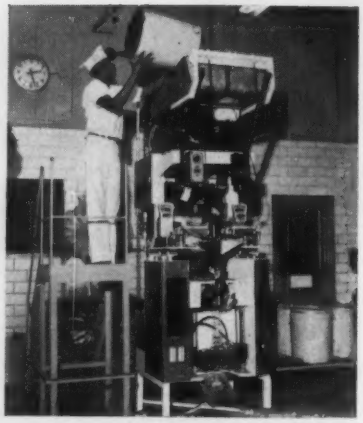
Robertshaw-Fulton Controls Co.

FULTON SYLPHON DIVISION, KNOXVILLE 1, TENNESSEE



EXPERIMENTAL MODEL for use with individual-servings potato-chip bags (½-oz.) is being developed by Lay. Small sack would be aimed at restaurant and sandwich-shop fields.

the top of the forming tube. From that point, the machine's operation is the same as for the Fritos.

Presently, Lay is exploring adaptation of a Mira-Pak for potato chips. Here, adjustments have to be made in weight accuracy, and control of waste in both product and bag material. An experimental unit is packing ½-oz. (individual serving) bags for the restaurant and sandwich-shop trade.

Engineers Show Way

Lay is getting even greater mileage from the new machines as the result of several innovations. Company engineers have brought about plus-savings with these three changes:

1) On the Bakon Puff units, an extra leveling brush replaces a metal scraper-bar, and reduces product breakage. It's attached to the cup-disk.

2) An electric eye attachment shuts off the heat-seal pressure jaws when the operator reaches in to adjust the packaging material.

3) An unusual code-dater that is entirely self-contained. It is actuated and kept in register by an electric signal from the oscillating, circular cam. The usual way to actuate such a device is by mechanically driven tie-in between the packaging machine and the code dater.

Lay has made prototype models of the dater. The units will be made commercially by Universal Packaging Machines, Decatur, Ga.

—FE Staff

CIRCLE 86 ON READER SERVICE CARD

CIRCLE 87 ON READER SERVICE CARD ➔

...flavor by Webb

Repeat sales (the best measure of customer satisfaction) begin with quality ingredients.
And you start with a competitive edge when you specify flavors by Webb—
outstanding for trueness, delicacy, uniformity and strength. Specialists in flavors
and custom flavor development for over fifty years. Inquiries invited. Catalog on request.

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IMPORTANCE of illustration and brand image is shown by evolution of Minute Maid's package design. Pioneer tin in '46 made no attempt to catch consumer's eye with attractive graphics. Two years later, double band of oranges was mounted on vertical label. In '58, to conform with stacking arrangement in store display cabinets, MM switched to horizontal layout. Debut of new design with Double-M crown was preceded last year with "interval" can that bore single band of oranges.

HOW TO BE SURE

New Label Design Is Right

This behind-the-scenes account of Minute Maid's label overhaul details savvy use of consumer surveys as check against missteps . . . Special "interval" can keeps sales up during switch

IMITATION may be flattering, but in the highly competitive frozen food field it can be deadly.

This problem was brought home to us—painfully. Competitors had copied Minute Maid's basic label design to such an extent that our own brand was in danger of losing the individuality and quality connotation it had achieved over the years. Too many retailers looked on the MM tin as "just another orange juice can."

This reduction in individuality and quality image sparked our decision to redesign our complete line.

HOWARD G. DICK
Vice Pres. of Sales & Marketing, Minute Maid Corp., Orlando, Fla.

Another, though less important, factor was our new processing technique (for concentrating orange juice without flavor or aroma loss). This had been a top-priority R&D project for years.

Our aim: To introduce the new label and processing method together for stronger impact.

This couldn't be achieved overnight, of course. It took careful planning to (1) decide what we needed, and (2) check it out with in-field tests.

How It's Done

Our first step, aimed at promoting smoother follow-through, was to co-ordinate the whole label program under A. J. Ferro, assistant sales director for frozen concentrates. Then we engaged the services of Jim Nash Associates, a package design firm with broad experience in the supermarket field.

Also, we wanted to develop a distinctive trade mark motif. And Nash had broad experience in this aspect of package design.

Ferro and Nash reps worked up a series of consumer surveys that helped us to decide on "must" label objectives for our 13 juices and ades. These targets included: (1) A strikingly attractive design to symbolize the product. (2) A graphic treatment to strengthen the MM family image, enhance appetite appeal, and be adaptable to our full line of concentrates.

In short, a design to set our

labels apart from the run-of-the-mill graphics that fill retail store freezer cabinets. What made this critically important was the limited cabinet space allotted to nationally advertised brands by chain store organizations with their own private labels.

Following a long series of tests, we finally selected our entry in the concentrate sweepstakes—"color band" labels for the juices, "swirl" for the ades.

To put these designs through the acid test, we placed them on sale, side by side with the old labels, in 13 Miami supermarkets. These locations were carefully chosen to include all segments of consumer buyers.

Knowing that buying habits and prior advertising efforts can tip the scales heavily in favor of the more familiar label, we felt that the test would be a success if an equal number of new and old cans were sold.

Results of the Miami check were a pleasant surprise. The new label outsold its predecessor by an overwhelming 3-1 ratio. This was subsequently verified by other tests conducted by an independent research organization.

One of these samplings, using a hand-picked segment of the buying public, probed consumer subconscious reaction by intensive psychological questioning. The responses indicated that the new label was favored over the old because of its emotional impact and its positive impressions of quality and naturalness in the consumer's mind.

This examination, involving some 1,500 housewives in 12 states, consisted of a comparison of colored photos of the new and old labels as well as competitive products. Here, as elsewhere, consumer preference leaned heavily toward our new design. Among the reasons cited were "color," "appetite appeal," "neatness," and "modern design."

Now that we had the design we wanted, we had to gradually phase out the old one and introduce its successor. A too rapid elimination of the familiar MM can could result in a loss of consumer brand identity.

DRESSED-UP SHIPPERS, that go along with new can label, promote brand image during distribution pipe-line phase, speed faster handling with prominently placed product name, and facilitate inventory control with IBM code.

Easy Go Pays Off

Our best bet to bridge this transitional gap seemed to be the use of an interim label aimed at slowly acquainting Mrs. Homemaker with our new package design.

We decided to use introduction of the new process orange juice as our ice breaker. The old vertical format was switched to a horizontal one, and we retained the familiar double band of oranges.

The next step in the interim program was a second horizontal label that had only one band of oranges. It was this container that opened the door all the way for our new "Double-M" crown design.

This interim label, still in use in many markets, will gradually be replaced by our final design as our new process juice moves into additional market areas. That way, we hope to avoid any strain that comes from changeover, because many of the familiar traits will be retained in modified form.

For example, we're keeping the broad white fields, but will break them up with undulating horizontal bands. Color of the bands will be coded to each concentrate—with the corporate name printed in harmonizing colors between the bands.

The stripes carry the name of the juice—orange, lemon, grape, pipeline, tangerine, grapefruit, and orange-grapefruit—in easy-to-read block letters.

Main theme of the juice labels is naturalness, with emphasis on the agricultural image. This tends to strengthen consumer confidence in the quality of MM products.

A different tack was taken for the ade labels. There, the aim was a gay and friendly design—one that would catch the eye of today's modern-minded shopper.

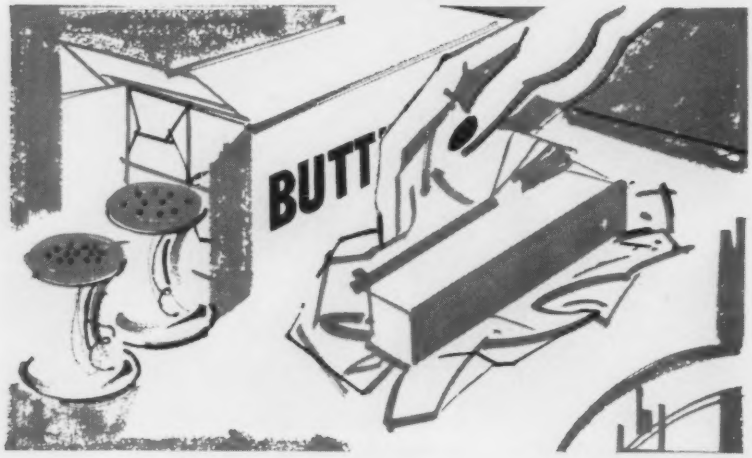
Here, too, extensive use was made of consumer survey data. Many labels were tested before we were convinced that the horizontal pastel "swirl" design met our needs.

As with the juice labels, distinctive colors are employed to identify each of the ades—lemonade, pink lemonade, limeade, orangeade, lemon 'n limeade, and grape 'n lemonade. Large block letters in harmonizing colors key the shopper to the specific ade she wants.

Although the ade and juice labels were approached from different angles, both were designed to help the harried housewife to quickly identify our product—not only as to type but as a member of the MM family.

This all-important family image is further strengthened by another innovation — a crownlike

West Carrollton Butter Wrappers
keep your product as fresh
as the day it was churned



Eliminate loss of freshness and flavor. *Specially designed* West Carrollton Parchment wrappers are *non-toxic*, *odorless*, *tasteless*, *insoluble* and *strong* (wet or dry). *Grease-resistant*, too. They keep your butter churn-fresh. Write today for samples and more information.

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BACON WRAPPERS	CHEESE WRAPPERS	MARGARINE WRAPPERS	RELEASE PARCHMENT
BAKERY PAN LINERS	FISH FILLET INSERTS & WRAPPERS	MASTER PARCHMENT	SAUSAGE WRAPPERS
BUTTER BOX LINERS	GIBLET WRAPPERS	MEAT WRAPPERS	TAMALE WRAPPERS
BUTTER TUB LINERS & CIRCLES	GREETING CARD PARCHMENT	MILK CAN GASKETS	TRI-WRAP & DUO-WRAP FOR SMOKED MEATS
BUTTER WRAPPERS	LARD CARTON LINERS	PARCHMENTIZED KRAFT	VEGETABLE SHORTENING CARTON LINERS
CAKE DECORATORS		POULTRY BOX LINERS	

SILICONE • MYCOBAN • QUILON & DRY WAXED PARCHMENT
CLEAN FOOD PAPER—For Delicatessen and Grocery Stores, also Fish and Meat Markets.

"Double-M" symbol that appears directly above the company name on all new labels. In addition to easy identification, the crown carries a definite prestige connotation.

These labels have another plus factor. Varying lighting conditions, and the frost that frequently collects on concentrate tins in freezer cabinets, won't affect the attractiveness of the labels or the ease with which individual products are identified.

The warm reception given the new labels in test markets prompted us to take a long, hard look at our Snow Crop concentrates and Hi-C fruit drinks. As a result, both lines are in the process of being modernized.

The updated Hi-C label, according to preliminary market test reports, benefits from stronger shelf impact and improved quality impressions. This was accomplished by changing the familiar Hi-C spotlight to a large white semicircle on which the brand name is printed in easily readable letters.

Appetite appeal has likewise been improved by brighter colors and more lifelike fruit illustrations for the four labels—grape, orange, punch, and pineapple-grapefruit.

So far, only the orange juice in the SC line has been changed. But it, too, has proved to be a better eye-catcher than the older one.

The new SC design has just one large orange on each of the three slanted panels as compared to the old label with its half-orange set against a whole orange in the background. The new design has a more cheerful mood, achieved by changing the dark blue sky over the snow-capped mountains to a robin's egg blue and superimposing on it the SC brand name in white.

Finishing Touch

To make our modernization program complete, we revised our shipping cartons. Here, we tried to depart radically from the traditional drabness of shippers—by dressing them up with brand name and flavor in the colors of the product contained in the carton.

One thing we've learned from this label overhaul is that there's no standing still as far as effective package design is concerned. Either you keep updating your packages or you fall behind in the parade. (End)

CIRCLE 90 ON READER SERVICE CARD

CIRCLE 91 ON READER SERVICE CARD ➔

NEW LIFT... LONGER LIFE FOR YOUR PRODUCTS WITH FIRMENICH POWDERED FLAVORS

New and improved techniques of process drying, exclusively employed by Firmenich, yield powdered flavors that flow freely, are dust free, and give you the finest precision in flavoring your products. These important developments in quality flavoring will improve the taste appeal of your products . . . extend their shelf life . . . give them package-to-package uniformity that captures customer preference. Samples of Firmenich Powdered Flavors, with technical information on their practical application, on request.

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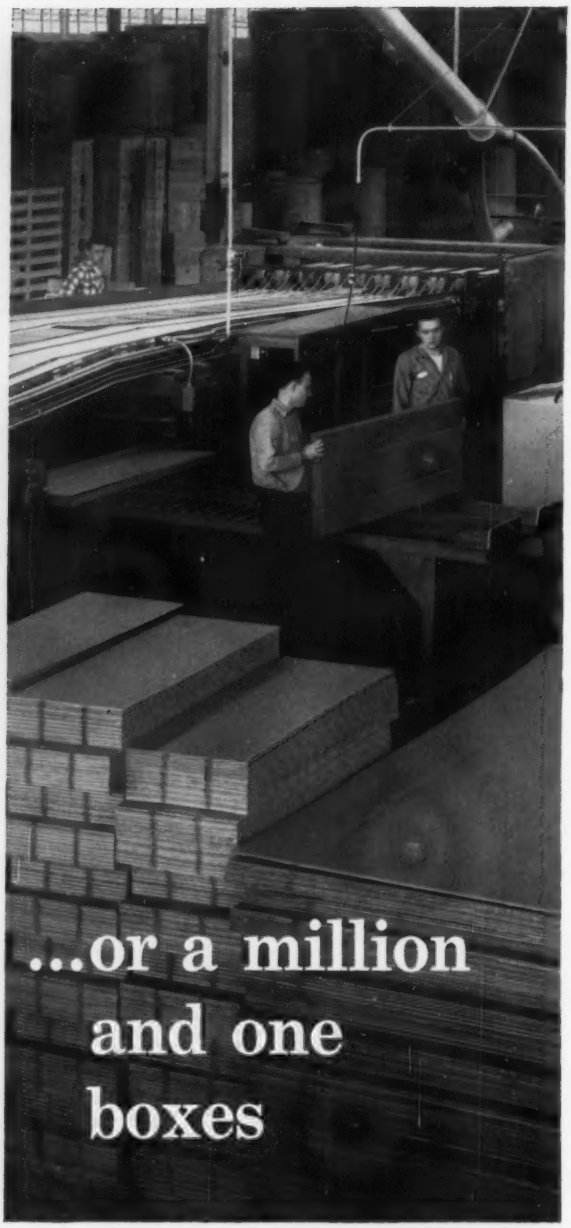


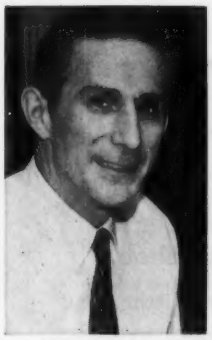
Perhaps you need a completely new type of corrugated package, for a product that requires ingenious container design. If so, you'll benefit from Hinde & Dauch's *creative approach* to package engineering. Or maybe you use standard shipping boxes in great quantity. In that case, you can count on H & D's large volume capacity—more than six billion square feet per year—to keep you supplied for uninterrupted production.

Hinde & Dauch Division

West Virginia Pulp and Paper

HINDE & DAUCH DIVISION, WEST VIRGINIA PULP AND PAPER, SANDUSKY, OHIO • 17 PLANTS • 42 SALES OFFICES

Mr. Leonard Katzman unloads cherries from the USS Cyclone Conveyor Belt.



"A USS Cyclone Conveyor Belt helped us triple production."

"We recently increased our production of bottled maraschino cherries on several trial runs by installing some new processing machinery and a USS Cyclone Belt," says Mr. Fred Weinspach, plant manager of Vita Food Products, Inc., New York City. "The new equipment includes an automatic packer, a capping machine, a pasteurizer fed by the conveyor belt and an automatic labeller.

"We used a USS Cyclone Belt in our old operation, too, but the new one is almost twice as wide. We're glad to use Cyclone again, because after seven years of steady use in a submersion-type pasteurizer, the old Cyclone belt showed no depreciable wear and appeared as good as when originally installed. We had no trouble with it—no breaking or oxidation—and we don't expect any with this one."

The new conveyor belt made of USS Stainless Steel will be able to increase Vita Food Products' production without adding much more personnel. A USS Cyclone Conveyor Belt system would work for *your* profit, too. Send the coupon for information on Cyclone's wide variety of efficient, work-saving conveyor belts.

USS and Cyclone are registered trademarks

American Steel & Wire
Division of
United States Steel

Cyclone Sales Offices Coast to Coast

American Steel & Wire
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Address _____

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"Know how" responsible for over 400 new citrus products—and 118 U.S. patents on processes—is at *your* service.

It may be our files can supply formulas or technical data by return mail. On any problem, simple or knotty, Sunkist technical experts will be glad to work *with* you—in your own plant—or *for* you—in their own citrus research laboratory. Write, and a Sunkist man will call.

Exchange

Sunkist Growers

PRODUCTS SALES DEPARTMENT

CAN LEMON JUICE DO A JOB FOR YOU?

If you're a food processor... fresh, frozen or canned...fruits and vegetables...fish or fowl... lemon juice can do *at least* one thing for you:

- It can prevent or retard off-flavor tendencies...
- Maintain and even enhance natural food flavor—keep food fresh-tasting longer...
- Prevent oxidation, preserve color, texture and flavor during and after processing...
- Adjust acidity in low-acid foods–retard enzyme action...
- Replace salt in low-sodium diet foods...

And that's only a beginning. The list of jobs lemon juice can do is an extensive one.

If you're not using it...you may be letting the competition get a lead on you. Don't market a product that's merely "as good as" the rest. Exchange Brand Concentrated Lemon Juice—made by Sunkist—can often make it superior for only a penny or two—and add a selling ingredient of distinction to your label.

Why not let your Sunkist man talk it over with you?

The address: Sunkist Growers, Products Sales Dept., 720 E. Sunkist St., Ontario, Calif.

CIRCLE 95 ON READER SERVICE CARD

Brings Ad Dollars On Target

*From files of National Consumer Panel of Market Research Corp. of America. Material is factually correct. Identities of products and companies have been masked to insure anonymity.—The Editors**

MARKETING CASE HISTORY OF MONTH

Management's problem

FOR SEVERAL years we've been marketing a convenience item whose sales growth has not come up to expectations despite heavy advertising support. In fact, it has become increasingly unprofitable.

However, a comparable, more recent convenience product, offering virtually the same ingredients in a different recipe, is going over much better. What puzzles us is the fact that we used the same advertising and merchandising strategy for the two versions.

We think the lagging product should be doing better. There has been no direct competition from private labels or "price" brands. Also, no major competitor has entered the field.

The newer item, on the other hand, faces much opposition both from chain brands and nationally advertised labels. In spite of this, it's making excellent headway.

WHAT WOULD YOU DO?

Management's decision

We decided to take a close look at the consumer franchises of both products. Objective: To ascertain their relative strength among different kinds of families.

To do this, we consulted the purchase records of families in the National Consumer Panel for the preceding year. The Panel's families are a representative cross-section of all U. S. households and they report continuously on their purchases of a wide range of food products.

We found that the slow-moving item was purchased chiefly by (1) one- and two-member units, (2) housewives over 45 years of age, and (3) families in the lower income category. The newer product was reaching a much broader market, and was especially popular among younger housewives with larger families.

Result of action

This clearly indicated that the latter item had much more growth potential, whereas the older version was appealing to a declining market.

As a result of this new information, we immediately revised our advertising plans for the unsuccessful product. Consequently, we transferred much of the amount we had planned to spend on the slow-mover to bolster the budget for the fast-mover (which had the greater potential).

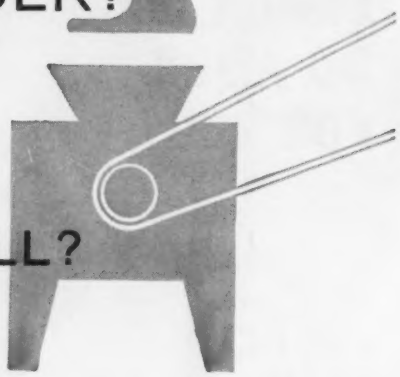
The growth in sales and brand share obtained for the newer product more than offset the decline in sales of the older item.

* For more information, write to Marketing Editor, FOOD ENGINEERING, Chestnut & 56th Sts., Philadelphia 39, Pa.

WHAT DO YOU DO TO YOUR PRODUCT?

DO YOU
CRUSH IT
IN A
MEAT GRINDER?

DO YOU
SMASH IT
IN A
HAMMER MILL?



some people don't, you know,

some people cut their product into little dices.

PICKLES for the meat industry are now cut into ¼" or ⅜" cubes.

PICKLE RELISH of high quality is now cut into ⅛" cubes or pieces of ⅛" x ⅛" x ¼".

CHEESE is now being cut into little and big dices. Roquefort cheese is easily diced at a temperature of 10°F.

MEAT with little fibre content such as bologna is cut into small dices for sandwich spreads and other products.

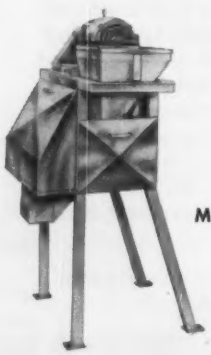
CHERRIES for ice cream dip or other purposes, are cut into little dices.

ALL KINDS OF FRUIT are cut into various small dice sizes for use in numerous products.

NUMEROUS PRODUCTS are now also being cut into julienne strips or thin slices with the "RA".

All of this is accomplished with the Urschel Model "RA" at capacities of up to 10,000 pounds per hour.

We'll be glad to test *your* product in our modern product cutting research kitchen. Write us today.



Model "RA" Dicer

URSCHEL
LABORATORIES INC.
VALPARAISO, INDIANA

Designers and manufacturers of precision, high speed cutting equipment for food products.

PAs Bar Price Hikes

Prices of raw materials and packaging supplies bought by food industry should hold steady over the next 6 mos. That's what purchasing agents predicted when queried by FE last month. (Of course, sugar is another story—for details, see page 23.)

Behind the PA's optimism is the rugged price competition among suppliers. One dairy observes "Makers of paper packaging would like to hike prices, but competitive pressure from plastics" blocks them. A big West Coast outfit echoes: "We've noticed some softening of raw material costs, due to stiffer competition."

Another outfit feels that "prices will increase on some packaging materials, to be partially offset by decreases on others. Strong competition will be a deciding factor."

Slightly less hopeful is a large baker who sees raw material prices edging up 1-2%, packaging maybe 3%. However, he's hopeful that economies elsewhere will absorb the added costs.

Libby Retrenches on Baby Foods

Intensified price wars that have wracked the baby foods field the past year forced their first major overhaul. Libby, McNeill & Libby will pull its line out of all US areas to concentrate on the West Coast and export markets.

A company spokesman declares the move is part of a long-range program to weed out unprofitable items. It was said that higher-than-usual merchandising budgets, brought about by stiffer competition, makes it harder to earn satisfactory margins.

Can't Lick 'Em? Join 'Em

Rising distribution costs, brought out by higher sales commissions and frequent small-size dropoffs at individual stores, have made it difficult for bakers to compete with chain store brand baked goods. Continental Baking is now working on two experimental approaches aimed at lowering unit distribution costs.

One program has CB making daily large-scale shipments to a chain's central warehouse, with subsequent store deliveries handled in the retailer's own trucks. A second effort finds CB baking private label bread for two large chains in key areas.

Either way, the company hopes to convince the chains such arrangements will mean more profits for the retailers on their bread lines, hence discourage them from pouring more money into new plants.

Marketing Barometer: Still Rising

Overall business may be sluggish so far this year, but food industry continues to follow a brisk pace, on both the manufacturing and marketing fronts.

Production-wise, FRB's output index for all-manufacturing slipped from 110.2 to 110.0 in the Jan.-June period. But the processed foods sector edged up from 103.2 to 103.8. **Also significant is the fact that food-beverage makers' sales were running 4.6% ahead of the '59 rate through May.**

The bounce-up is even more pronounced in the important consumer spending area. **While sales of all retail outlets for the first 5 mos. of '60 were 3.1% over the '59 pace, food stores pushed their business up 3.7%.** And eat-drink places show an even stronger 4.9% improvement. Helping out, of course, is rising personal income—up 5.5% for the year's first half.

Lag in Food Store Sales

Dollar volume of nation's food stores edged up 3% in '59, Census reports, but trailed retail trade's 8% advance. Reason: Heftier consumer outlays for hard goods which helped push food's share of sales down to 23.9% vs. 25% in '58.

Outlets in the West, however, upped their sales 6%. And organizations with 11 or more stores scored with a 5% boost.

Food Makers Hep on 'Growthmanship'

What with the politically-inspired interest in growth rates, it's interesting to see how the food-beverage industry compares with the nation. While GNP's average annual increase between '54 and '58 was 3.2%, canners and freezers averaged 8.5%, bakers and dairy firms 5.5%, meat packers 5%, sugar refiners 4.8%, beverage bottlers 3.8%, and candy makers 3.3%. Grain mills trailed with 2%.

BRIEFS

Distributors are pressing for special concessions on incidental sales terms, Wisconsin canners report. Sought after are higher cash discounts, payments less discounts after regular invoice period has expired, and canner purchase of distributor labels at latter's cost (higher than packer's label allowance).

New ad roadblock: GMA's Pres. Paul Willis warns that proposed amendment to "Model State Law on Weights and Measures" (which requires listing of package weight, measure, or count in price advertising) could complicate manufacturers' promotions, lead to higher unit costs.

Instant tea (powder form) is bought by slightly more than 4 out of 10 families, Owens-Illinois reports.

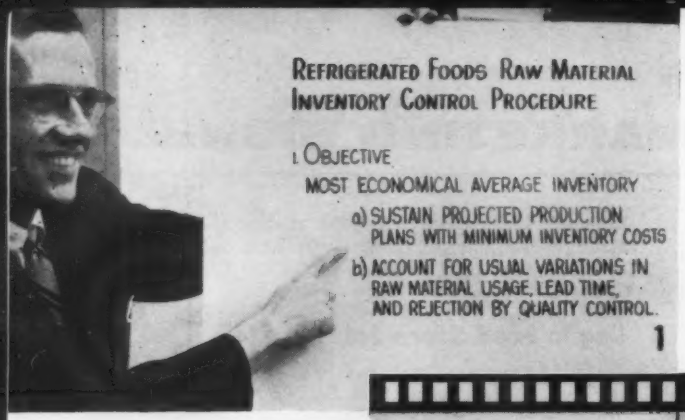
Don't be floored if you see Ann Sothern winking at you on the highway. GF's Post cereals, claiming a first in animated outdoor billboards, will feature large-size photos of TV personalities doing the come-on as result of new multi-image technique.

Chain manufacturing: Goods made in their own plants account for one-third of First National Stores' sales, 11% of A&P's volume, reports investment broker Pennington, Colket & Co.

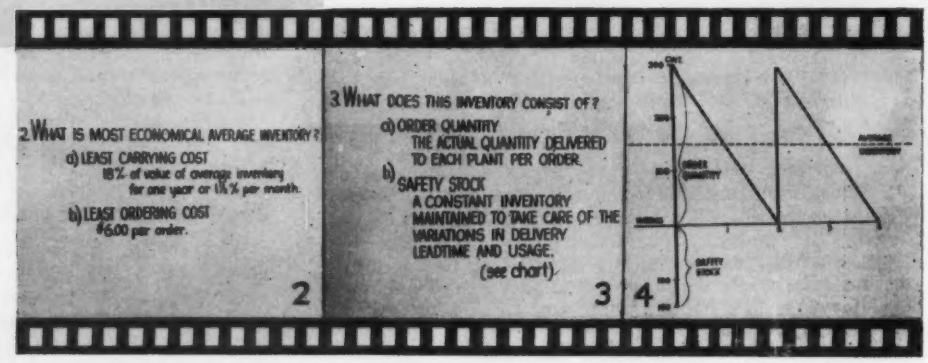
Spectaculars aren't limited to TV: Stokley-Van Camp staged what it called world's largest display of pork 'n beans (63,360 cans) at Oklahoma City super.

Birth rate (per 1,000 population) declined in April, making it 8th month in a row in which the rate has been lower than year-ago corresponding period.

Memo to egg-heads: Cerebral hairshirters who worry about the imbalance between education and ad spending may be comforted in knowing that due to business' desire to improve itself, management consulting services raked in $653 million in '58—substantially more than the $505 million all of us spent in pool halls, billiard parlors, and bowling centers.


REFRIGERATED FOODS RAW MATERIAL INVENTORY CONTROL PROCEDURE
1. OBJECTIVE
MOST ECONOMICAL AVERAGE INVENTORY
a) SUSTAIN PROJECTED PRODUCTION PLANS WITH MINIMUM INVENTORY COSTS
b) ACCOUNT FOR USUAL VARIATIONS IN RAW MATERIAL USAGE, LEAD TIME, AND REJECTION BY QUALITY CONTROL.
1

KEY POINTS to bear in mind when determining correct inventory levels and order quantities are shown in these guide-charts used by Pillsbury's refrigerated foods div. Jack Culley, dis-


2 WHAT IS MOST ECONOMICAL AVERAGE INVENTORY?
a) LEAST CARRYING COST
18% of value of average inventory for one year or 1½% per month.
b) LEAST ORDERING COST
$600 per order.
2
3 WHAT DOES THIS INVENTORY CONSIST OF?
a) ORDER QUANTITY
THE ACTUAL QUANTITY DELIVERED TO EACH PLANT PER ORDER.
b) SAFETY STOCK
A CONSTANT INVENTORY MAINTAINED TO TAKE CARE OF THE VARIATIONS IN DELIVERY LEADTIME AND USAGE.
(see chart)
3
4
COST
ORDER QUANTITY
AVERAGE INVENTORY
SAFETY STOCK

Taps New Profit Source With

Pillsbury's new formula for balancing on-hand stocks "saves" firm $1-million, frees needed capital for vital growth projects . . . Customers gain, too, with improved service

SCIENTIFIC inventory control—carried out on a company-wide basis—means more dollars on the profit side, a stronger competitive position. That's because a firm hand on warehouse stocks promotes better service to customers, lengthens shelf-life of finished goods, and frees capital for needed growth projects.

That, in brief, is the theme of the IC program recently kicked off by The Pillsbury Co.

FE Staff

As Pres. Paul S. Gerot capsules it: "Better inventory management presents an annual $1 million-profit opportunity for us. This lies in taking a tougher attitude toward inventories. It means being constantly watchful, making sure only those materials and supplies are kept on hand that are needed to maintain efficient operations and full competitive services to our customers.

"Our goal then is tighter control of inventories turning at a faster rate. To accomplish this, the support and participation are needed of everyone involved in any way with inventories."

Because of the nature of its business, Pillsbury uses inventories in many ways.

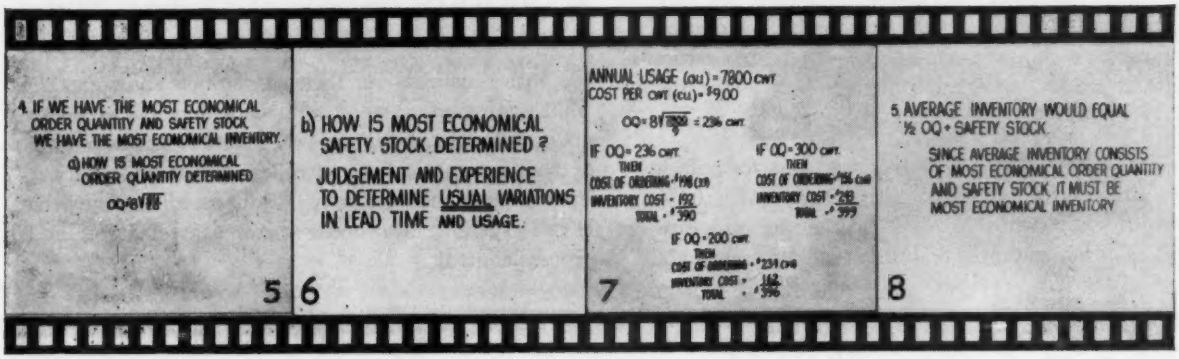
Grain merchandising group, for example, contributes to corporate profits by buying, storing, and selling grain. Inventory costs are their production costs. In Pillsbury's divisionalized organization, consumer divisions "buy" their flour from the industrial divisions who then store it.

Banks Had A Hand

On-hand stocks include raw materials, finished goods, supplies, and idle equipment principally financed by short term loans.

A key factor that gave Pillsbury's IC program a shot in the arm was the jump in cost of upkeep last September. At that time, banks raised their prime interest rate from 4½ to 5% for unsecured loans. Worst yet, this rise caught Pillsbury smack in

tribution-production coordinator, points to objectives (1). Approaches are outlined in question-and-answer form (2, 3) and a typical 4-week inventory is plotted (4). Then, a formula used for determining most economical order quantity (5, 6) is broken out with actual figures representing annual usage, cost per cwt (7). Finally, working guide for average inventory (8) is summed up as equal to one-half the order quantity plus safety stock. Culley warns, however, that success of formula hinges on individual attention to each order for whole year.


4. IF WE HAVE THE MOST ECONOMICAL ORDER QUANTITY AND SAFETY STOCK, WE HAVE THE MOST ECONOMICAL INVENTORY.
c) HOW IS MOST ECONOMICAL ORDER QUANTITY DETERMINED
5
b) HOW IS MOST ECONOMICAL SAFETY STOCK DETERMINED ?
JUDGEMENT AND EXPERIENCE TO DETERMINE USUAL VARIATIONS IN LEAD TIME AND USAGE.
6
ANNUAL USAGE (cu) = 7800 CWT
COST PER CWT (cu) = $9.00
IF OQ = 236 CWT.
IF OQ = 300 CWT.
IF OQ = 200 CWT.
7
5. AVERAGE INVENTORY WOULD EQUAL ½ OQ + SAFETY STOCK.
SINCE AVERAGE INVENTORY CONSISTS OF MOST ECONOMICAL ORDER QUANTITY AND SAFETY STOCK, IT MUST BE MOST ECONOMICAL INVENTORY
8

Inventory Management Program

the middle of its biggest borrowing season.

Why the Program?

Pillsbury, a growing company with tremendous seasonal demands for capital, borrows heavily to build inventories in the course of a fiscal year. Cashier John LaBounta puts company's borrowing during first three months of fiscal '60 at somewhere between $18-30 million per month. In the past borrowing reached $45 million in November and December (grain harvest time).

At one point last year, notes payable equalled nearly $28 million. Their cost to Pillsbury was nearly $3,900 a day, or $120,000 a month in interest charges.

Putting pressure on inventory costs are: (1) Higher interest rates, and (2) sharper increase in total inventory leads.

Getting down to figures: Inventories during the first 3 mos. of fiscal '59 averaged $38 million. They were financed to a large extent by money borrowed at a prime rate of 4%.

During the first 3 mos. of fiscal '60, the average was $52 million—an increase of 37%. Prime interest rate jumped to 5% during the year—an increase of 25%.

Probably, the increased inventories and borrowing in recent months reflect Pillsbury's accelerated search for new business opportunities. Even so, rising stocks are a danger signal—pointing to higher costs. Hence, all the more reason to tighten up on inventories, turn them over at a faster rate.

What Makes Control Tough?

To hit on the right inventory level is no "snap job." Year-end-earnings figures offer a good yardstick for inventory decisions. Complicating the whole matter are the many factors (such as cost of borrowed money) that must be balanced against final sales price when stocks are liquidated.

One problem that's always present is the human tendency to hoard.

Examples: Suppliers tempt company buyers with quantity discounts. And, when forecasting sales, salesmen put themselves on the safe side by requesting more products than are needed to fill customer orders promptly.

All this doesn't mean that Pillsbury has been lax in this area. Over the years company has been tightening its cost controls. For example, the new service center and distribution warehouse system (FE Jan. '59, p. 52) is geared to closer meshing of production with orders to curb inventory drain on capital.

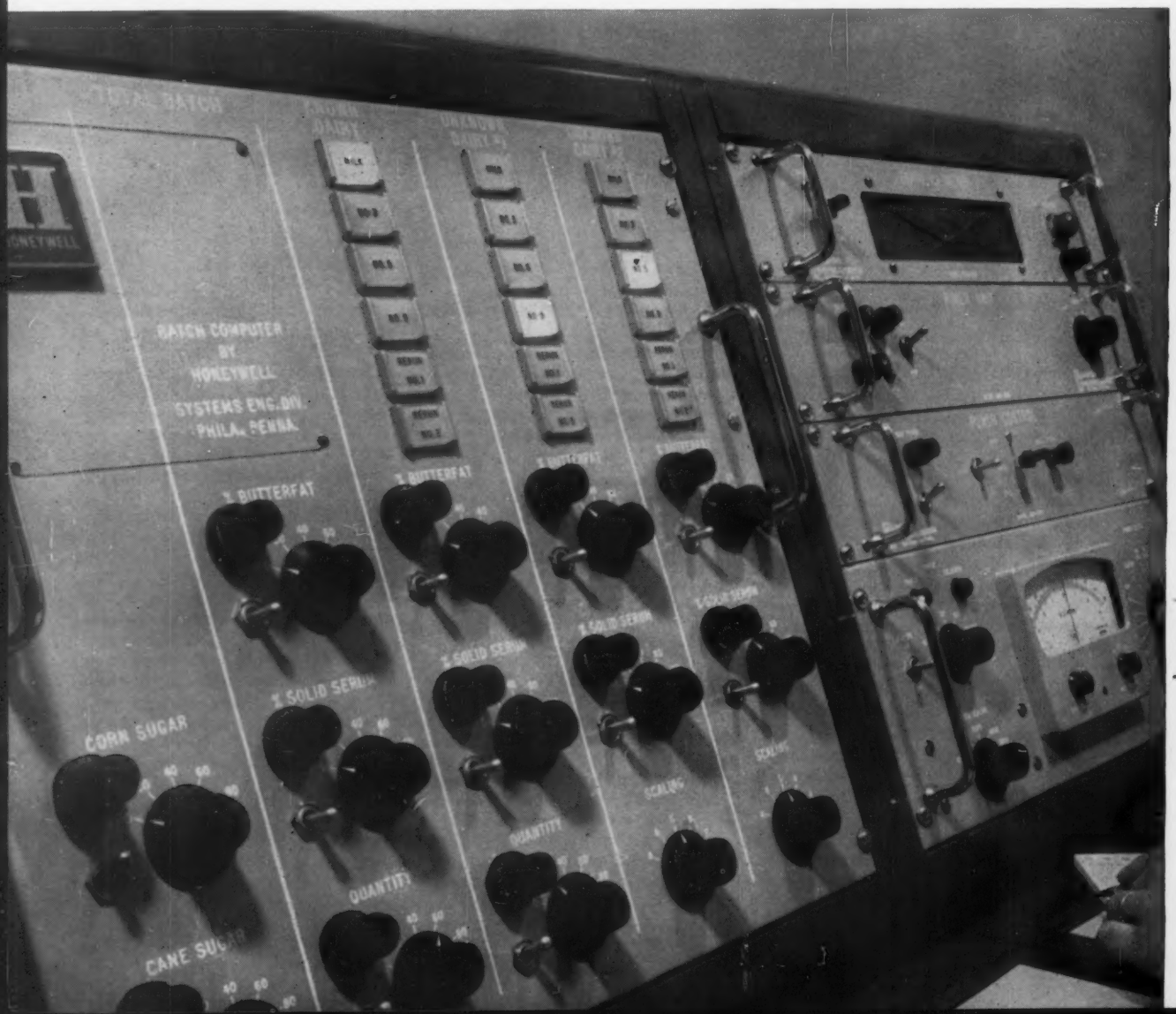
Constant improving of warehouse-handling facilities is helping Pillsbury to minimize inventory costs. Specifically, new Springfield, Ill., warehouse combines electronic data processing with integrated case sorting (FE Feb. '58, p. 67) to pull handling costs down. Important from the standpoint of curbing inventory

First fully automatic

A new computer-directed ice cream mixing plant installed by H. P. Hood & Sons, Boston, is completely automatic from raw ingredients to flavoring. A Honeywell analog computer provides the means for fully automatic handling of raw products, formulation, blending, and cleaning. Quick and exact formulation results in precise butterfat control, which yields high quality ice cream.

The analog computer solves the basic mix formula in about six minutes, with a normal accuracy of $\pm .02\%$. Solutions are recorded on punch cards for programming the flow blending system that simultaneously and automatically blends all ingredients, thereby decreasing production time. The accounting department also uses these punch cards to provide continuous inventory and cost records.

From a Honeywell graphic panel, one man can operate the entire installation. Lighted symbols show exactly what's going on . . . what pumps are on, what the levels are in the tanks, etc. The panel also shows the sequence of the automatically controlled cleaning operation. From a push button start, all tanks and lines, even the HTST system, are under automatic cleaning and process control.



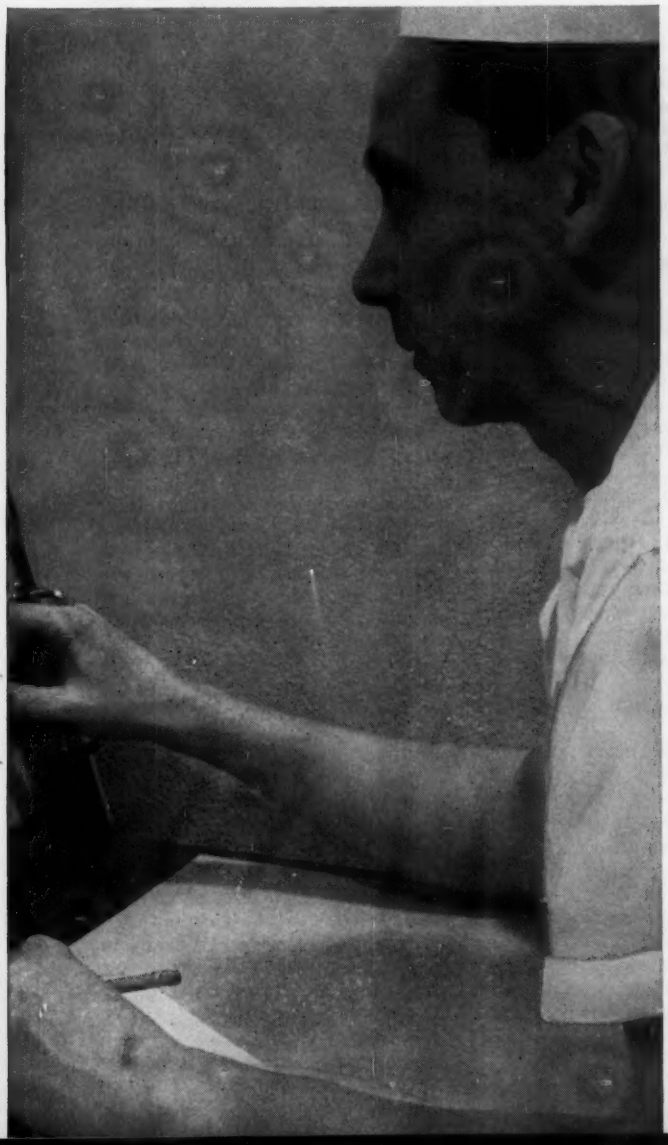
food plant

Your Honeywell representative can help you gain the advantages of the latest computer techniques in automatic process control. See him for complete system design, installation, maintenance and service. Ask him about personnel training. Seek his advice on renting a computer system. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.—In Canada, Honeywell Controls, Ltd., Toronto 17, Ontario.

Punched card programs automatic flow blending system in which all ingredients are blended simultaneously.

Computer analyzes and resolves desired mix information, which is translated to a punched card. The computer program involves six dairy ingredients, water, and two non-dairy ingredients and is based on butterfat content and serum solid content of raw material.



Graphic panel gives overall view of the process, and includes provision for automatic clean-in-place of the process including tanks and pipelines. The entire system can be operated at full efficiency by production personnel.

75th YEAR PIONEERING THE FUTURE

Honeywell

First in Control

SINCE 1885

Shorter Stacks———More Cash

"Inventory control problem is in learning to look at a stack in the warehouse and seeing the money it represents." That's how Pillsbury's Jack Culley, distribution and production coordinator supervisor for the refrigerated foods division, sums up the importance of scientific inventory management.

Inventory control saves you money two ways. First, it makes more cash available—an important factor when borrowed money costs more. Second, inventory investment represents a big chunk of working capital—about 30%, says National Industrial Conference Board.

If you take a sharp look at what's in your warehouse—both raw materials and finished goods—chances are that, like Pillsbury, you'll be rudely awakened at what it's costing you. You'll soon discover room for better inventory management—from the time supplies come through your front door until cased goods, billed to the customer, leave your back door.

To get a good cost picture, start with incoming raw materials. Then show the cost of maintaining inventory through the entire manufacturing cycle in terms of dollars and time. These carrying charges include such items as space and clerical cost, insurance, taxes, and markdowns. Graph-plotting your figures—dollars on vertical and time on horizontal axes—will help visualize your inventory condition.

Then figure what protective stock to carry so as to avoid running out of materials when demand exceeds planned usage or when suppliers fail to deliver as expected.

If you want to determine economic order quantities, balance the costs of production with those of carrying inventory. You may be purchasing raw materials to be processed into ingredients for inter-department or inter-division use. (Like Pillsbury's mills that buy wheat and mill it into flour for "purchases" by company's cake mix plants.) If so, don't overlook balancing cost of acquisition against carrying cost.

Finally, evaluate quantity discount prices for purchased goods.

costs, new system shortens time span between packaging of products and loading onto carts or trucks.

Pillsbury is aware of the other benefits that come from faster stock turn over. Shrinkage (losses from damaged goods) is reduced, and fresher ingredients for manufacturing means longer product shelf life.

Areas for Improvement

As you can guess, there are three potential ways to control inventories. These are: (1) Careful review of inventory at each location to be sure that it's a money-making operation, not a profit-draining expense; (2) faster stock turnover to ease the drain of working capital; and (3) fuller cooperation among all departments responsible for inventories.

Pillsbury figures that if inventory were reduced to year-ago level, annual savings would touch $\$^3/_4$ million. And, if turnover rate of basic working capital were increased from present six and seven to 10 or 12 times a year, savings would top $1 million (based on 5% prime rate).

Pillsbury, of course, can't keep interest rates from climbing. But company knows that improved inventory management will take some of the sting out of higher interest charges.

Putting the inventory control program over calls for careful planning. Result is a shrewd four-prong program that includes:

. . . Organizing the attack. A formal, company-wide drive was initiated last fall under the direction of a key sponsor, Executive Vice Pres. Dean McNeal. Divisional controllers, working with their vice presidents, cue in all personnel dealing with inventory responsibilities—such as those in procurement, production, distribution, sales, and corporate staff areas.

In corporate staff group, responsibilities entail working with personnel who inventory supplies and materials. Formulated here are detailed procedures for establishing and controlling stock levels.

Program is broken down into three phases. First step involves a general policy statement on inventories. This policy assures adequate supplies and materials at all times and optimizes use of working capital.

Staff departments maintain only sufficient inventory of any item that will assure adequate stock for individual department operation. Same thing applies to keeping on hand only sufficient stock to supply other operating departments within the company. Case in point here is the industrial division's "selling" of flour to the consumer products division.

Next phase coming up will be the establishment of an operating policy on inventories. And this will be followed in the final phase by detailed procedures for setting and controlling specification levels at each location.

. . . Savings put on target. Pillsbury has made the $1 million (or greater) annual profit opportunity a goal for management in all company areas.

. . . Getting everybody possible into the act. Inventory cost cutting isn't a one-man show — or even a management-only affair.

So, Pillsbury's not waiting until the formal program's completed to start action. It feels that a great deal can be immediately done to get the right attitudes established, aggressive action started against this problem.

Measures already taken to get this phase of the program rolling include steps toward better communication, stories in the company's house organ emphasizing the need for tighter stock control, and top-level discussions in major company locations.

Objective is to make all concerned exert tighter control over inventories under their supervision. Success in this area, they're told, will free hundreds of dollars for vital growth projects.

. . . Spotlighting the best sources of quickest cuts. Accountants, while studying present inventory conditions and needs in every area, are going after these possibilities first. (FE Staff)

FAMILIAR SIGHT in Dairy Dan territory is this blue-and-white dealer truck. Trade "keeps rolling" through winter, too, on 12-month schedule. Over 150 franchised dealer trucks cover 24 states and Canadian provinces.

Builds Boom Market on Wheels

Keen merchandising and special dealer-training formula spark steady sales growth and year-'round profit for leading soft ice cream manufacturer

MOBILE MERCHANDISING may be a distribution question mark for many businesses, but for the soft ice cream manufacturer, sales on wheels can pay off in steady four-season profits.

At least, that's the sales picture at Dairy Dan, Inc., Wilkes-Barre, Pa., which has over 150 franchised dealer trucks cruising the streets of 24 states and Canadian provinces. They are serving cones, milkshakes, and specialties to an increasing portion of the populace.

Behind the solid growth of this young organization (started in 1956) is a success formula geared to meet the needs of a product that thrives on impulse buying.

Here's the formula's key points:

1. A thorough market knowledge. Before placing a franchise in the hands of an operator in a new area, Dairy Dan makes a careful survey of the location's population figures and buying habits. As a result, says the company, each present operation "can earn a minimum of $10,000 a year."

2. Complete training program. When a new operator pays out $12,000 for a fully equipped truck, Dairy Dan aims to make sure he gets a maximum return on investment. The parent firm sets up a route and teaches the dealer techniques of proper business management.

In addition, he's guaranteed an exclusive territory with plenty of room for expansion, and is backed by an advertising and merchandising program.

3. Top quality products. In competition with local roadside stands and retail stores, DD recognizes that its product must stand out.

While soft ice cream comes under many different state standards of classification calling for a butterfat content of 2% up, "Our product," says Pres. Alvin Rothstein, "is just what the name implies. It's soft ice cream with sufficient butterfat content to earn its name." And a good-sized budget is aimed at continued research development of an even better product.

4. Efficient mobile facilities. The firm uses Ford P-350 trucks equipped and planned for fast and efficient service to g u a r a n t e e greater profit and help control expenses. According to Mr. Rothstein, 12-month truck operation spreads overall costs and requires little added expense.

Proof of Pudding

Evidencing the formula's success is the fact that 60% of the firm's 1-truck dealers have ordered additional units. On top of that, DD expects to account for $18 million in equipment and supplies this year. Another 400-500 trucks are planned to be in operation by the year's end.

Of course, the business is not without its problems. And one of the toughest has been promotion of legislation to permit trucks to operate.

In states like Michigan, for example, soft ice cream was considered a manufactured product and had to operate from a business address with sanitary facilities. In June of last year, this law was rewritten to permit mobile-unit selling. Favorable legislation has also been passed in other states.

Another problem is the supposed seasonal aspect of mobile ice cream sales, often considered only an 8-month operation.

But the trend now seems to be toward a full year's schedule. "Why not?" asks Rothstein. "It's as warm inside homes in the winter as it is outside during the summer. And," he adds, "think about it this way: You sit down to watch TV or read, and one of our trucks comes by. If you like soft ice cream, you'll buy it."

And so this enterprising firm takes its product to the people at their front doors, in their parks or wherever they are. What's more, the people are buying.

Mobile marketing's potential for other food manufacturers remains to be ranged. But, with the right kind of product and the correct merchandising formula, it can reap a sales harvest. It has for Dairy Dan. —(End)

RICHARD T. MORRIS
FE Correspondent, Wilkes-Barre, Pa.

AO's Goldberg Process Refractometer Prevents Waste ... Increases Profits

This in-stream Refractometer can be mounted in wall of process vessel, evaporator, vacuum pan, product pipe line or other location where continuous reading is desirable. Quickly determines total soluble solids in turbid and dark-colored concentrates such as jellies, jams, purees, juices and syrups.

1 **Prevents profit loss:** Determines exact endpoint of cooking batch by providing continuous, in-process readings of total solids. Prevents profit loss due to soluble solids "give away" by over concentration.

2 **Prevents product waste:** In-process readings on *hot* product eliminates old-fashioned external sampling with its consequent product waste and time loss. Savings in product alone, in most cases, will pay for the instrument in one season.

3 **Prevents errors:** Since product is always tested in-process, errors due to evaporation, temperature changes or opacity are eliminated. Readings are not affected by viscosity, foam, air bubbles or pulp and there's no need to correct for temperature differences between refractometer and process vessel. Accurate readings can be taken by anyone...no skilled technicians required.

4 **Three Brix ranges available:** 0-25%; 12-72%; 36-82% total soluble solids. Withstands pressure of 40 lbs. and temperatures ranging up to 250°F.

For further information write for Brochure SB10125

SPENCER American Optical Company

INSTRUMENT DIVISION, BUFFALO 15, NEW YORK

MEN & COMPANIES

H. G. van Mameren

Alec J. Dedrick

V.-P. Boosts at IF&F . . . Named new v.-p. at International Flavors & Fragrances Inc. is a man familiar with company operations both here and abroad —Henri G. van Mameren.

Presently general manager of firm's Flavor Div. at Elizabeth, N. J., Mr. van Mameren was previously associated with affiliates in France, Belgium, and Holland in product development, sales, and general management.

Pres. Charles P. Walker also announced election of three additional v.-p.s — Alec J. Dedrick, Ernest Shiftan, and Fred W. Webster.

IF&F was formed in Dec., '58, through merger of Polak & Schwarz of The Netherlands and van Ameringen-Haebler of N. Y.

F. W. Webster

Ernest Shiftan

New Industry Leader . . . Elected president of the big Stokely-Van Camp organization is Alfred J. Stokely.

Announcement was made by William B. Stokely, Jr., board chairman and chief executive officer of the firm, which produces Van Camp's Pork and Beans, canned fruits and vegetables under Stokely's Finest label, and frozen foods under brand names Stokely's Finest, PictSweet, and Van Camp.

A. J. Stokely, an executive v.-p. since '56, succeeds H. F. Krimendahl, named board vice chairman and assistant chief executive officer.

New president rose through sales and production departments of Stokely-Van Camp, which celebrates its 100th anniversary next year.

A. J. Stokely

Personnel

Mattison W. Alderman has joined Sealtest Foods Div. of National Dairy Products Corp. as new products manager.

M. A. Becker has been elected president of the Metropolitan Food Corp.

Ezra Taft Benson joins U.S. Agricultural Hall of Fame maintained by Saddle

NICHOLAS APPERT AWARD for preeminence in and contributions to the field of food technology is presented to E. H. Weigand (right) by George Beach, Chicago IFT Chairman. Award was made at annual meeting of IFT in San Francisco.

& Sirloin Club at Chicago Union Stock Yards.

Dr. Thomas N. Blumer, research scientist at North Carolina State College, is '60 recipient of Frank C. Vibrans Senior Scientist award of American Meat Institute Foundation.

Albert M. Coleman moves up to general sales manager post for food products division of Pet Milk Co.

Col. William F. Durbin succeeds **Brig. Gen. Thad A. Broom** as deputy executive director of the Military Subsistence Supply Agency in Chicago, and becomes the No. 2 man of the $700 million Defense Dept. food supply organization.

Joseph B. Hall, Kroger Co. president, has accepted chairmanship of the Chain Food Store Industry Committee of Project HOPE.

Kenneth W. Hartley is now v.-p. and sales manager of Dodge & Olcott, Inc., flavor ingredient manufacturers.

J. H. Hauser, C. H. Musselman Co. president, is new president of the Processed Apples Institute, Inc.

Albert G. Hodor has been appointed general product manager for food products division of Pet Milk Co.

Dr. Frank V. Kosikowski, dairy industry professor at State College of Agriculture, Cornell University, has received the Paul Lewis Award in Cheese Research for '60.

Ralph C. Lakamp is new director of Kroger Food Foundation, chain's scientific testing and development center. He succeeds late **George F. Garnatz.**

William F. Laporte succeeds late **Walter F. Silbersack** as president of American Home Products Corp. Also elected were: **Herbert E. Carnes**, board vice chairman; **H. W. Blades**, executive v.-p. and a director; **Kenneth A. Bonham**, executive v.-p.; and **John J. McClellan** and **John Phillips**, both new assistants to Mr. Laporte.

Thomas D. McGinnes, Virginia Seafoods president, is president-elect of National Fisheries Institute.

F. Preston Mottram is new manufacturing v.-p. at Red Star Yeast & Products Co.

Robert C. Powell, secretary-treasurer of E. A. Johnson & Co., San Francisco, is new president of Pacific Coast Coffee Assn.

Joseph P. Rothwell, Jr., has been named manager of Morris April Bros. Eatmor Div., Inc.

Judson Schiebel is new v.-p. and comptroller at B. Manischewitz Co., Newark, N. J.

John C. Smith is now Gerber Products Co. manufacturing v.-p. In other major changes, **Ray B. Wakefield** becomes research v.-p., and **Arthur J. Frens** is new v.-p. and assistant to president.

Ambrose E. Stevens, gen-

they're switching

to Lake States Torula Yeast U.S.P. for an Economical Nutrition boost!

Nutritional Supplements . . . as a component of vitamin-mineral mixtures

Canned Food Mixes . . . protein and lysine source for baby food

Seasoning Blends . . . high protein carrier, bland flavor

Institutional . . . ideal additive to high protein, low sodium or therapeutic diets

Pharmaceuticals . . . compatible, edible, nutritional base

Lysine Supplement . . . in cereals, crackers, cookies, breads, snack items

why? Lake States Torula Yeast is a nutritional concentrate of unusually high quality. It has 50% minimum of protein, containing all of the essential amino acids, and is especially rich in vital lysine. It is also a rich and reliable source of B vitamin factors and essential minerals such as calcium, iron, phosphorus and iodine.

A significant content of completely protected, unsaturated, fatty acids is another Lake States feature. This important nutrient is protected by inclusion stabilization and by a natural anti-oxidant which occurs in sufficient excess to offer protection to other fatty materials in a Torula Yeast containing mix.

Lake States Torula Yeast is bland in flavor and blends well with most products. In many applications it also serves as a flavor enhancer.

Produced from sterile media under vigorous and continuous quality control, Lake States Torula Yeast assures you purity, uniformity, and stability, plus long shelf life. At *low cost*, it provides the enrichment your products need in today's nutrition-minded marketplace.

To obtain complete information and a liberal test sample, write today, stating your application.

Lake States
AMERICA'S PIONEER PRODUCER

Lake States Yeast and Chemical Division of St. Regis Paper Company
RHINELANDER, WISCONSIN
Dept. FE-8

Sales Office: 420 Lexington Ave., New York 17, N. Y.; or W. Glenn Wunderly Company, 232 North Lake Avenue, Pasadena, California; Dillons Chemical Company, Ltd., Montreal and Toronto, Canada

eral manager and executive v.-p. of Ocean Spray Cranberries, Inc., has received First Annual "Hats Off" Award from New England Wholesale Food Distributors Assn.

Dan C. Turrentine succeeds retired **Edmund A. Rossi** as manager of the Wine Advisory Board.

James F. Welsh heads up newly created position of general sales manager of McCormick Div. of McCormick & Co.

W. Wayne Wittenberger has been appointed chief engineer for Kitchens of Sara Lee, Inc. **C. F. Tuzin** is new production manager and **Charles T. Woods** takes over as market research director.

Industry

Armour & Co. joins the growing list of U. S. firms which have had property seized by Fidel Castro's Cuban "militiamen." Armour's Havana fertilizer plant, private dock, and equipment have been taken over without notice or explanation. In 1957, firm closed its main operation, but continued to operate the fertilizer plant, reported to be worth $500,000. At press time, no action had been taken by Armour authorities over the seizure of this plant or the building grabbed last March which formerly housed offices and warehouses.

Coca Cola Export Corp. has inaugurated 11 new bottling operations since beginning of the year, bringing total of authorized bottlers operating outside U. S. to 669.

Consolidated Foods begins foreign operation in Venezuela through acquisition of 51% of stock of **Vinagrera Venezolana,** processors of vinegar and sauces.

Standard Brands has begun legal action to complete transfer of shares of **Planters Nut & Chocolate Co., Suffolk, Va.,** thus far blocked by smaller firm's trustees. SB originally paid $12 million for 114,345 shares, representing slightly less than 50% of Planters' outstanding stock, and is willing to pay $105/share for balance, $35 above firm's recent market price. But 3 of 5 Planters' trustees are holding back to consider other offers. Virginia firm netted $1.7 million in last fiscal year.

United States Tobacco Co. moves into its second food operation with purchase of **Lummis & Co.**, Philadelphia manufacturer of canned nuts and packaged nut products. **Circus Foods** was UST's first food acquisition.

Associated Industries

AviSun Corp. will build its multi-million lb./yr. polypropylene plant in New Castle, Del.

Lassiter Corp., big packaging designer and manufacturer, plans to merge with the **Riegel Paper Corp.** Stockholders of both firms will vote on the proposal next month.

PaCon Corp., Rockford, Ill., has received world rights control of the new "Bogner Can." Negotiations for "right to manufacture" and "right to use" are now in process with several firms.

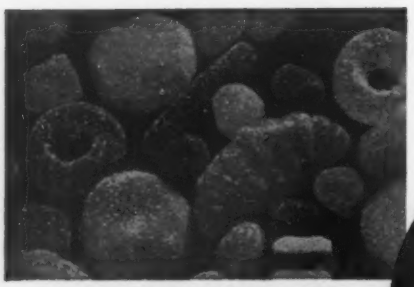
Perkin-Elmer Corp., Norwalk, Conn., has completed arrangements with **Horton Equipment Leasing Div.** of Advance Industries, Inc., Cambridge, Mass., to permit instrument users to lease chemical analytical instrumentation.

American Can Co.'s new president, Roy J. Sund, is former chief of firm's **Marathon Div.**

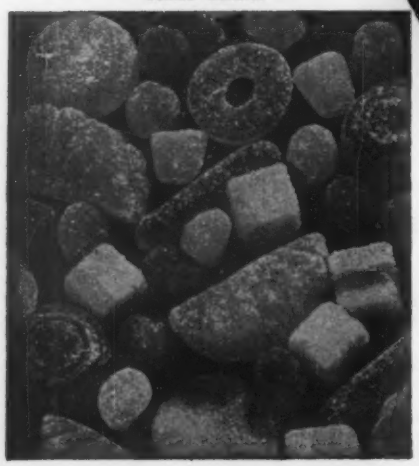
Tennessee Eastman Co. and **Texas Eastman Co.,** divisions of **Eastman Kodak Co.,** will have marketing activities expanded through a new International Div.

Yale & Towne Mfg. Co.'s new president, Gordon Patterson, succeeds retired Gilbert W. Chapman.

Dow Chemical Co.'s new market research manager is J. W. Everson, who succeeds Parker Frisselle, now in consumer product sales development.



CONFECTO-JEL
Especially made for Jellied Candies



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Always Depend On

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APPLE PECTINS
35 years

- Adaptable to wide range of PH levels.
- Neutral color and flavor—blends naturally with more different fruits than any other pectin.
- Gives product resiliency to avoid breakage during shipping.
- Improves spreadability of jams, jellies and preserves.
- Standardized to uniform strength so that product always has the same consistency.

Write, wire or phone for full information, technical advice, or location of nearest warehouse.

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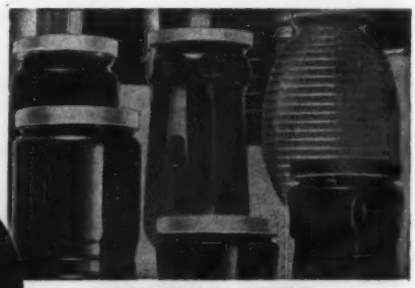
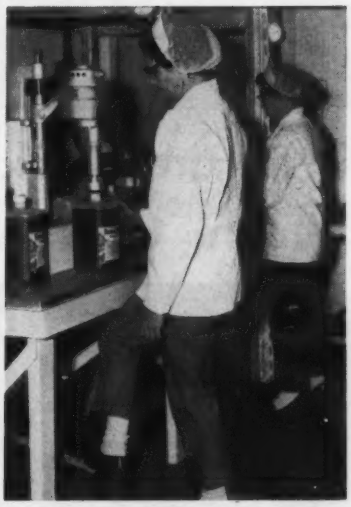


NUTRL-JEL
Regular and Slow Set
For Finest Jams, Jellies and Preserves

OLD AND NEW: Switch from glass (left) to one-piece blow-molded polyethylene bottle has practically eliminated in-transit damage claims, which were once big headache to this processor. Square shape of plastic version also gives protective snug fit in shipper.

EASIER HANDLING is assured by 1-gal. plastic bottle that weighs 3-oz. when empty compared to 45-oz. glass jug. Result: Decided reduction in worker fatigue.



SMOOTH ADJUSTMENT: Switch from glass to plastic was accomplished without any changes in bottling and capping equipment. Size, thread, and capping pressure remained same.

Multi-Benefit Plastic Bottles

Switch from glass to light 1-gal. polyethylene jugs eliminates damage claims, slashes freight costs, for seasonings firm . . . Wide use for other gravity-fill liquid products seen

STRIKING ADVANTAGES are claimed for another plastic "first." This time, it's a semi-rigid polyethylene 1-gal. jug, being used by Basic Food Materials, Vermilion, Ohio.

This enterprising firm ('59 sales topped $1 million) is shipping steak seasoning, barbecue sauce, and pizza sauce in the plastic containers.

Further, the poly bottle is feasible for a wide range of other gravity-fill products, according to supplier firm — Plax, Hartford, Conn. Likely prospects include flavorings, extracts, and syrups.

Among the benefits BFM gained by its switch from glass to plastic bottles are:

(1) Sharp reduction in damage claims, (2) hefty savings in freight costs, (3) less space needed for container inventory, and (4) opening of a whole new market for the firm's products.

Customers Get Happy

Biggest problem connected with the previously-used glass jugs was in-transit damage. As Board Chairman Ray F. Beerend puts it: "In the worst of times, we'd have three or four damage claims in one day—running, over a year's time, into the hundreds.

"We had one man doing nothing but handling and following up on these claims. It got to be a very expensive proposition. And worse still, it impaired our customer relations."

Compared to this, damage cases involving the plastic unit are practically nil. In fact, BFM says, during the first six months with the new container, there were fewer than five complaints.

"Our customers like the new plastic jug as much as we do," sums up V.-P. Harold Markman.

BFM has been able to chalk up substantial freight savings, primarily as the result of the plastic bottle's lighter weight. An empty poly jug tilts the scale at 3-oz., vs. 45-oz. for the glass model.

And since the square-shaped plastic unit is slightly shorter and smaller in cross-section, it's accommodated in a smaller outside cardboard box. This results in 37% less board volume per carton and a 12-15% reduction in tare weight—which enables BFM to ship under a different, and lower, freight tariff.

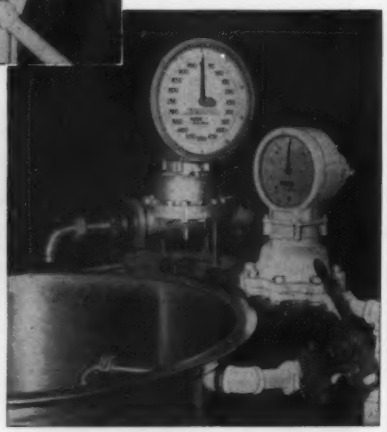
In fact, the company reports,

Every Batch of Old Dutch Salad Dressing the Same — in Consistency and Taste

Niagara Displacement Meters insure CONTINUOUS QUALITY

Ingredients of each batch are run in quickly . . . accurately with Niagara Meters in the Old Dutch, Inc. Plant, Blasdell, New York.

Close-up of Niagara Meters showing large vertical registers with easy to read figures for accurate measurement.



Old Dutch Salad Dressing has won wide acceptance for its palate-pleasing piquancy. Safeguarding the ability to maintain this flavor acceptance are two Niagara Displacement Meters, one for measuring the oil and the other the dressing mixture.

Prior to the installation of these Niagara Meters, it was necessary to completely remove all salad dressing from the premix tank before starting another batch. This was necessary because ingredients were measured by the dip stick method.

Now, correct amounts are metered to the tanks by the Niagara Meters regardless of amount of salad dressing left in the tank from previous batch. Result: Faster, accurate preparation of each batch for uniform quality and lower costs.

Let us show you how Niagara Meters can reduce *your* formulating costs. Mail coupon today.

BUFFALO METER COMPANY, Inc.
2910 Main Street, Buffalo 14, N. Y.

☐ Please send me additional information on Niagara Meters.
☐ Please have representative call.

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ADDRESS_____

CITY and STATE_____

BUFFALO METER COMPANY
INCORPORATED
2910 Main Street • Buffalo, New York

freight costs are now little more than half what they were when glass was used.

Of course, a plastic bottle (priced around 23¢) costs more than a glass one—about 75% more, says BFM. But after balancing this against lower shipping carton and freight costs, the packer feels he is still saving 7½¢ per gallon through use of the plastic containers.

The change from glass to plastic has also helped out on inventory space. Previously, the bottles were received four to a box, and were shipped out in the same containers—which meant keeping space-eating empty shippers on hand until used.

The plastic jugs, however, are received in 60-unit lots, and shippers are bought knocked down, calling for less storage space. Also, the square design of the new containers takes up proportionately less space than the round bottles.

Eyes New Field

Merchandising-wise, BFM sees the plastic bottle opening a whole new market for its tenderizer. Although the firm has confined sales up to now to meat packers and other commercial users, it plans to come out with a line of pint-size squeeze bottles for the restaurant and hotel trade. The company believes this kind of bottle has a strong potential as an on-table condiment server.

Converting to plastic bottles required no changes in BFM's existing bottling and capping equipment, according to Markman.

The steak seasoning is cold-mixed in large, stainless steel vats and fed by gravity flow to a siphon filler which accommodates four jugs at a time. Filled bottles are moved by hand to semi-automatic capping machine.

Instead of the metal caps used on the glass, plastic ones are employed here for a better seal. But size, thread, and amount of capping pressure of the plastic units are exactly the same as for glass.

In addition to the 1-gal. carrier used by BFM, Plax makes the bottles in a variety of sizes—from ½ to 13 gal. Blow-molded in one piece from regular or high density poly, the jugs can be silk screened or lithographed. Also, they can be fabricated with handles.—(End)

FE SERVICE CENTER

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Reader Service ..... Back of Book

NEW EQUIPMENT & SUPPLIES

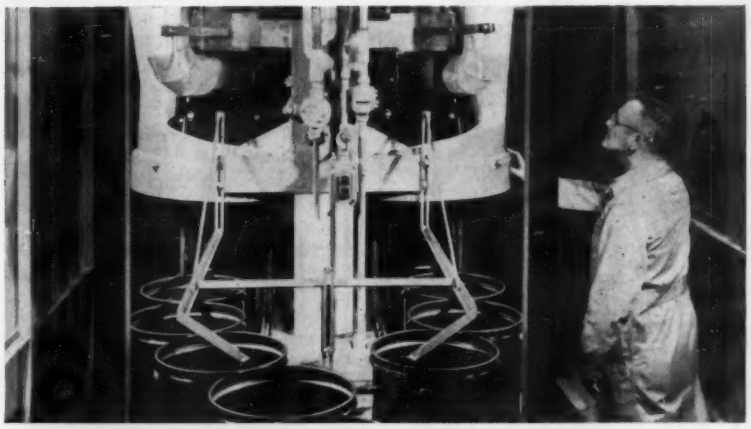
Midget Electric 'Eyes'

Now available are miniaturized electric "eyes" specially suited for setup in restricted spaces and areas. Applied to trigger automatic operations, the small units will monitor, count, and control objects passing or dropping through a light beam.

Performance is through activation of relays when a direct light beam is interrupted (cut) by a passing object. Operation by surface-reflected light also may be arranged.

Relay housings of units contain the power relays and associated electronic circuitry, together with sensitivity and light adjustments. —*Photomation, Inc., 96 S. Washington Ave., Bergenfield, N. J.*

Circle 251 on Reader Service Card



5-Gal. Steel Pails Centrifugally Lined

New high-speed centrifugal lining of 5-gal. pails now offers greater control of critical lining thickness. The technique is similar to that successfully used with 55-gal. drums, but pail linings are applied at more than three times the speed.

In operation, lining material is atomized and deposited by centrifugal force. As pails are positioned (photo), they are raised along the axis of a rotating applicator head that spins at 7,000 rpm. Lining is applied on both upward and downward passes, which assures uniform coating of such critical areas as double seams, bead, welded side seam, and rivets holding the bail ears.

Centrifugal dispersion, rather than spraying with air, curbs entrained dirt and trapping of air bubbles between lining and steel body of pail. In addition, this technique minimizes amount of required solvent in coating formulation. Excess solvent can be trapped in lining, causing bubbles that break during curing and become pin holes in finished coating.—*Rheem Mfg. Co., 1701 W. Edgar Rd., Linden, N. J.*

Circle 252 on Reader Service Card

◀'Square'-Spraying Nozzle

A nozzle that provides a full, square spray pattern, with extremely wide angle projection, features new FullJet unit.

It's designed for installation on spray manifolds where open area is limited. Average spray angle is 110 deg., enabling wide coverage where distance between nozzle and work is short.

Nozzles are supplied in capacities ranging from 5.9 to 48 gpm. at 30 psi. There is choice of male and female pipe connections. — *Spraying Systems Co., 3213 Randolph St., Bellwood, Ill.*

Circle 253 on Reader Service Card

Tighten Down on FOAM

with Dow Corning Silicone Defoamers*

There's a *right* tool for every job. In foam control it's Dow Corning silicone antifoamers or defoamers . . . job-proved thousands of times over as the most efficient, most economical, and most versatile foam suppressors available.

*At prescribed levels, are sanctioned by FDA

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Please rush a FREE SAMPLE of a Dow Corning silicone defoamer for my product or process, which is (indicate if food, aqueous, oil or other): _____

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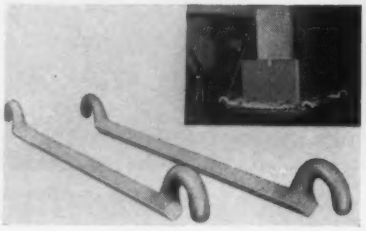
Equipment & Supplies



Bars Speed Pallet Handling

Crane handling of pallet loads is made easier, safer, faster with use of new bar-and-hook units.

Quickly positioned under any pallet, these devices balance the loads and eliminate chain slippage. Thus, pallet damage and maintenance is reduced.

Of heavy walled tubing, the rugged bars are tipped with tough, high-strength cast-steel hooks. Units come in 32, 38, 44 and 50-in. lengths. — *Calumet Steel Castings Corp., 1636 Summer St., Hammond, Ind.*

Circle 254 on Reader Service Card

Compact Vacuum Filter

Horizontal, continuous vacuum filter uses new vacuum seal with no movable valves and has corrosion-resistant drainage belt for close filtrate separation.

Unit features high capacity, low-operating and maintenance costs, visible filtration cycle, and less head-room and floor space than equal capacity filters.

Filter is formed by combination of vacuum and gravity drainage and is gravity-discharged. Vacuum box permits varying vacuum at different points in cycle and complete separation of filtrates. — *Straight Line Filters, Inc., Box 291, Wilmington, Del.*

Circle 255 on Reader Service Card

SARCO

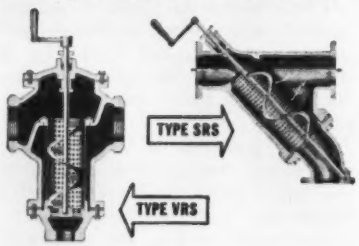
PIPELINE STRAINERS
help prevent shutdowns

HANDLE ALL MEDIA
condensate, steam, water, oil, and other piped fluids

PROTECT ALL EQUIPMENT
temperature and pressure regulators, steam traps, pumps, meters, burners, compressors, hydraulics, lubricators, and nozzles.

AVAILABLE IN ALL TYPES AND SIZES

SCRAPER STRAINERS
hand operated and motorized



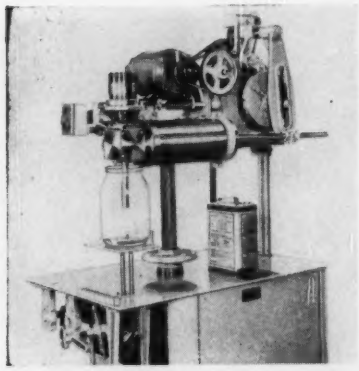
SELF-CLEANING Y-TYPE

NEW! TYPE CT CAST STEEL, SPECIFICATION A.S.T.M. — A-216 Gr. WCB
SARCO
Tensile strength 70,000 lbs. per square inch minimum, for saturated steam or liquids to 600 psi, non-shock and 750° F. total temperature.

Also Sarco Y-Type strainers in cast iron, brass, and semi-steel, screwed and flanged, all sizes and pressures.

For information on Sarco strainers, contact your Sarco sales representative, district office, or distributor; or write— 2166

SARCO
SARCO COMPANY, INC.
635 MADISON AVENUE, NEW YORK 22, N. Y.
PLANT: BETHLEHEM, PA



Short-Run 'Viscous' Filler

Filling of viscous products in plants making moderate runs, or having quick changeover requirements, is stepped up with use of this new model bottom-fill, hand-feed, single-valve unit.

Machine accommodates all glass and "F" tins up to 1 gal. Incorporated are 3-in. pipe feed, 1-gal. cylinder, and piston with fine-fill attachment on an automatic lift table. Only 2 x 3-ft. floor space is required. — *Elgin Mfg. Co., 200 Brook St., Elgin, Ill.*

Circle 256 on Reader Service Card

Jiffy-Action Hand Printer

With this lightweight, manual printer, says maker, cartons and boxes can be marked many times faster than with old-fashioned stenciling, labeling, or rubber-stamping methods.

Self-inking, printer can be used with interchangeable type in 1/16 to 1¼-in. size range, or with quick-change plates supplied by manufacturer to customer's specifications.—*Algene Marking Equip. Co., 232 Palisade Ave., Garfield, N. J.*

Circle 257 on Reader Service Card

Food packagers . . .

Patapar® offers a full range of F.D.A. Accepted wrappers and liners.

All food packagers affected by the 1958 Food Additives Amendment to the Federal Food, Drug and Cosmetic Act will find it easier to achieve F.D.A. Accepted packaging by using Patapar. While Government scrutiny of food packaging grows more intense, Plain Patapar Vegetable Parchment can still offer absolute purity. *That's because there aren't any additives in Plain Patapar.* This Vegetable Parchment is a dense, fiber-free cellulose . . . whose *natural* qualities are purity, wet strength, grease and moisture resistance, good separation characteristics, and remarkable toughness. Furthermore, these qualities can be provided in varying degrees according to need.

Paterson will be glad to help you select the type Patapar which best suits your requirements. Code numbers and the corresponding characteristics of the Patapar vegetable parchments on the F.D.A. Accepted list fill up too much space to list here. If you would like specific information, simply fill out and mail the coupon for a sample package.

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Paterson Parchment Paper Company, Bristol, Pennsylvania
Please send me a sample package of F.D.A. Accepted Patapar®

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Company _____

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JEFFERSON
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PROPYLENE
GLYCOL

Most Versatile Polyol for Use in Foods, Flavors and Extracts

U.S.P. grade propylene glycol has low toxicity and excellent solvent, hygroscopic and preservative properties which make it preferred in a great variety of food processes. Food flavor, color or emulsion solvent; flavor extractor; humectant in packaged food products . . . these are a few of the proved applications for U.S.P. propylene glycol.

For helpful technical service or prompt delivery-price information, write to Jefferson Chemical Company, Inc., 1121 Walker Avenue, P. O. Box 303, Houston 1, Texas.

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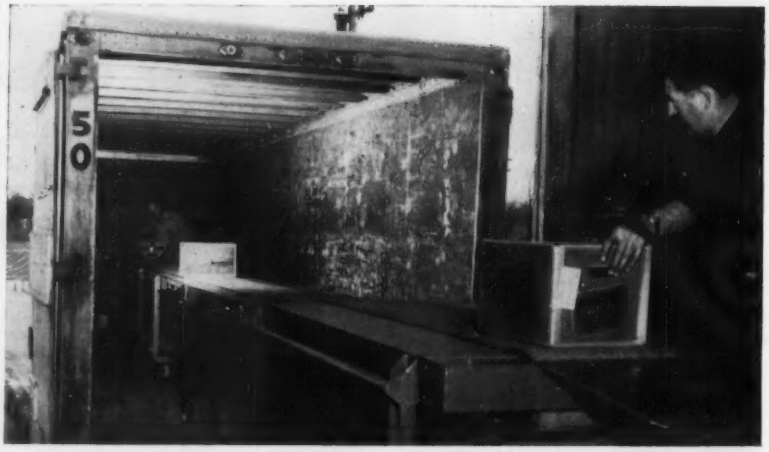


Pushbutton 'Scope Conveyor Speeds Case Handling

New telescoping-type conveyor, tradenamed Tel-Co, operates in or out by pushbuttons—no need to stop the belt.

It's thus readily adjustable to operate from 8 ft. up to 40 ft. And in retracted position, it's easily portable by a single man.

Unit comes equipped with a 16-in.-wide fabric belt running 36 in. above floor. There are hinged receiving plates on both ends. Belt runs at speeds up to 200 fpm.—*R. T. Sheehan Co., P.O. Box 345, Plymouth, Mich.*

Circle 258 on Reader Service Card

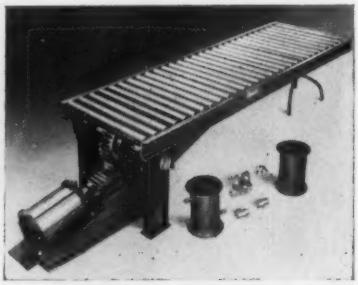
Hook-On Type Car Shaker

New car shaker is readily operated by one man, with no chains or rods to tighten and no need to get it, on, or under the car.

Unit is mounted anywhere along length of car by means of a jib crane or fork lift. Sturdy steel frame simply hooks over car side.

In operation, rotary component transmits powerful vibrations throughout car, thus loosening and shaking compacted material through open hopper gates. Either a 220 or 440 v., 3-phase, 60-cycle a.c. current supply is employed to turn up 900 vibrations per minute. —*Syntron Co., 460 Lexington Ave., Homer City, Pa.*

Circle 259 on Reader Service Card

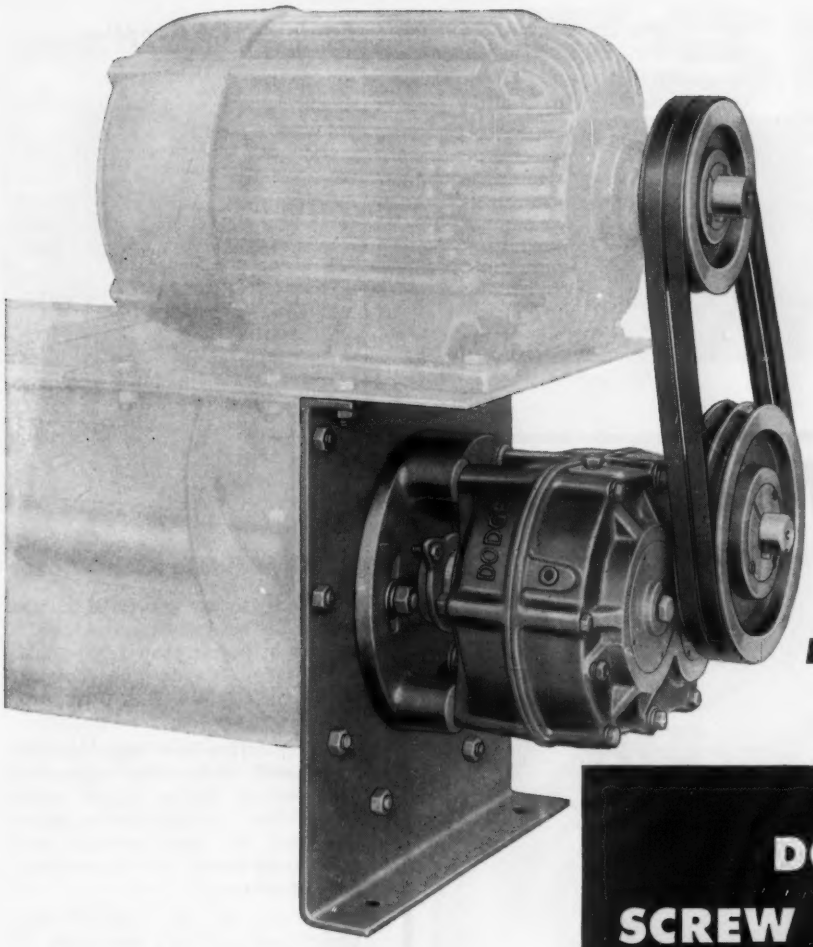


Valve-Controlled Lift Gate

New line of heavy duty, oil-air operated lift gates offers choice of either roller or wheel travel in units up to 10-ft. long and 3-ft. wide.

Special valves give complete control of raising and lowering action, and arrangements can be made for handling operations from distant points through remote pushbuttons. — *Sage Equip. Co., Inc., 30 Essex St., Buffalo 13, N. Y.*

Circle 260 on Reader Service Card



Entirely New!

Entirely Different!

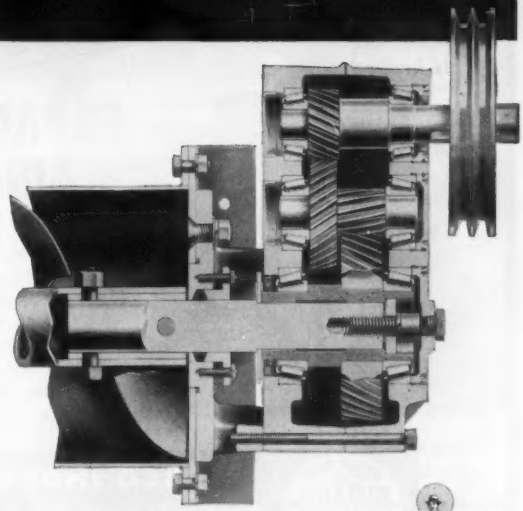
DODGE SCREW CONVEYOR DRIVE

A complete package drive, including

- **Rugged, high-efficiency Reducer.**
- **Quick-removable Driving Shaft.**
- **External Packing Gland.**
- **Trough End (optional).**

Amazing new ease of installation—new ease of maintenance—new economy! No external thrust bearing or motor base is necessary. (However, a motor base of special design is available as optional equipment.) Pre-selected Taper-Lock V-Belt drives give required speeds. Built-in puller makes it easy to change driving shaft—without opening reducer. External packing gland protects reducer. Helical steel gears. Timken Bearing equipped throughout. Available from stock with 1½", 2", 2 7/16", 3" and 3 7/16" driving shafts. Ask your Dodge Distributor, or write us for bulletin giving complete technical data.

DODGE MANUFACTURING CORPORATION, 2800 Union, Mishawaka, Ind.



DODGE
of Mishawaka, Ind.

CALL THE TRANSMISSIONEER—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look under "Dodge Transmissioneer" in the *white* pages of your telephone directory, or in the yellow pages under "Power Transmission Equipment."

CIRCLE 113 ON READER SERVICE CARD

Moves Materials on Air

A cushion of air impels materials at speeds to 2,000 fpm. in new Jetstream conveyor system. Level-load capacities run to 30 lb./sq. ft., depending on substances being moved. Inclined operations are practical up to 45 deg.

Metering of low-pressure air through special louvers (photo) sets up a directional airflow to carry materials along the surface of conveyor. Floating movement is so gentle that system offers excellent possibilities for handling fragile materials.

Conveying air also can be varied in temperature to afford cooling, heating, or drying treatments. Attachments are available for "up-and-over" installations. — *Engineers Associated, 1403 Eastshore Hwy., Berkeley 10, Calif.*

Circle 261 on Reader Service Card

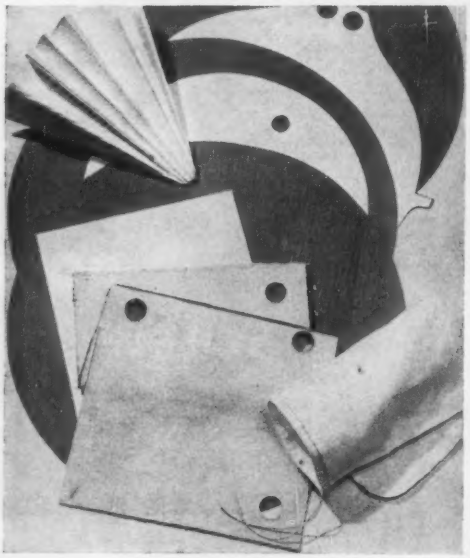
Need Filter Materials NOW?

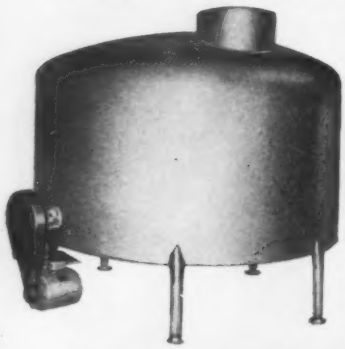
FILPACO Stocks most items for Immediate Delivery!

If you need quality filter materials at a saving, specify "FILPACO" as so many processing and manufacturing firms in your industry are doing.

Filter paper in complete range of grades available . . . samples furnished for testing or send us your materials for testing. Also: filter cloth, cotton, wool, felt, glass, Orlon, Dynel, Saran, silk, Dacron, Polyethylene, Filyon, Nylon and others . . . cut and sewn to your required sizes and shapes.

—Your inquiry is invited—



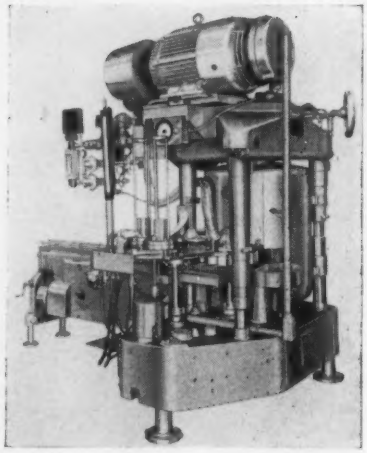


FILPACO STAINLESS STEEL TANKS

. . . for storage and mixing in all styles . . . vertical, horizontal and rectangular . . . open or closed . . . in stock or to your specifications.

We manufacture an extensive line of filters, filter materials, tanks, mixers and fillers.

FILPACO INDUSTRIES
THE FILTER PAPER CO.
2450 S. Michigan Avenue, Chicago 16, Illinois



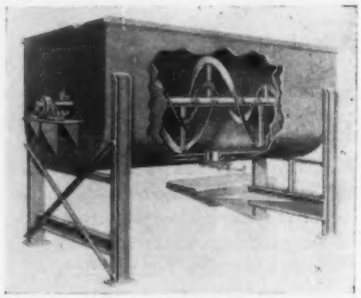
1,000-a-Minute Can Closer

Listed as the 449-HCM-2, new 10-station can closing machine is capable of better than 1,000-a-minute speeds. It's designed for use with cans of less than 3 7/16-in. dia.

Power-driven base plates are incorporated, eliminating chance of deadheading during double seaming. Other features are straight-line feed for least product spill, dual cover feeds, and interrupted-field cover trip.

Machine can be equipped with undercover gassing components for use on beer or carbonated beverages. And undercover steaming units can be fitted.—*Continental Can Co., 100 E. 42nd St., N. Y. C. 17.*

Circle 262 on Reader Service Card



Special-Action Blender

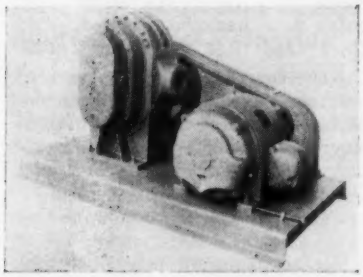
Automated control is incorporated in new line of ribbon blenders. Units are designed for fast, accurate blending of powders, pastes, liquids, and the like.

Maker cites "Tri-Mix" action as a feature. Thus, self-reversing flow is combined with top-to-bottom

turnover "to assure perfect blending action without stratification."

With automatic program control board, all auxiliary equipment for the cycles can be put in operation either individually or in sequence, thus conserving valuable time.—*Tower Iron Works, 60 Borden St., Providence, R. I.*

Circle 263 on Reader Service Card



Top-Efficient Air Blower

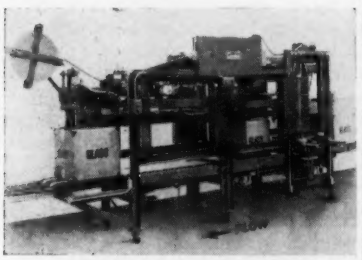
Shipped as a package, ready for immediate operation, new compact, high-performance air blower is designed for use either where an air source is currently lacking or there's need to boost the supply.

Among varied applications are: Aeration, ventilation, waste disposal, water distillation, pneumatic conveying, forced draft of combustion air, and inert gas pressurizing.

The blower, a positive pressure rotary, is mounted on common base with drive. Both single and double-stage units are available, and sanitary bases can be supplied.

Capacities of models range from 1,500 cfm. at 3 psi. to 450 cfm. at 10 psi., with power running from ½ to 40 hp.—*Sutorbilt Corp., Compton, Calif.*

Circle 264 on Reader Service Card



Latest Case-Sealer-Taper

Despite its size, this advanced, automatic, case-sealer-taper is portable for ready movement into

RESINA

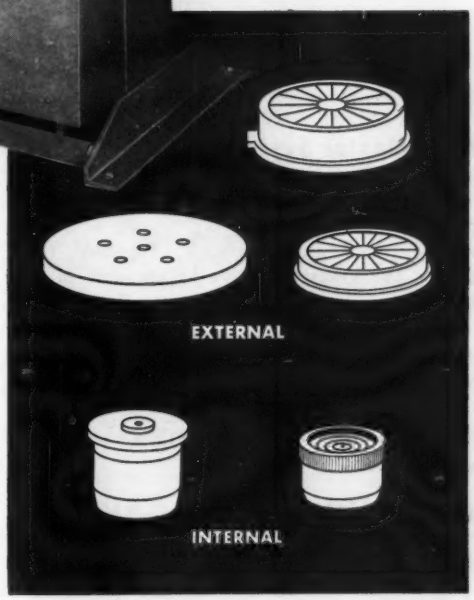
fully automatic FITMENT APPLICATOR specially designed

for the FOOD Industry

MODEL FA8

We manufacture Capping machines for every type of fitment... solid or perforated with or without tabs for exterior or interior use.

Capacity from 20 to 120 fitments and up to 300 per minute depending on fitment and container.



TOPS THEM ALL

Consult a RESINA packaging and sealing specialist regarding your special problem.

RESINA AUTOMATIC MACHINERY COMPANY, INC.
572 SMITH STREET BROOKLYN 31, N.Y.

There's no MYSTERY to

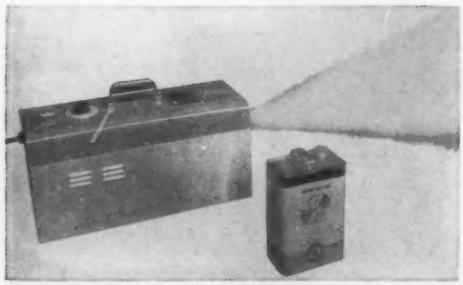
Safe Insect Control

in the Food Industry

You can do it yourself with AERO-MASTER . . . at only 1¢ per 1000 cu. ft. of space.

ONLY Aero-Master gives you:

- **Maximum killing of *all* insects—Complete safety—no toxic residue**
- **Fully automatic—Set timer, plug in and A/M does its job**
- **Low initial cost . . . lowest operational cost**
- **Free factory maintenance on Lifetime Guarantee**



Aero-Master System combines the low cost A/M Fogging Machine—a precision built automatic, portable electric thermal fog dispenser—with A/M Fogging Fluid, a highly refined pyrethrum insecticide. **Together, they deliver the lowest effective killing cost in the industry.**

Used for 10 years in hundreds of plants, no changes were required to meet strict new Federal legislation.

Get the Facts Now—find out how YOU can test A/M in your own plant under your own conditions.

Mail Coupon Today!

Mail to: Aero-Master, Inc.
325 W. Pacific Avenue, St. Louis 19, Missouri

Please send me facts about "Safe Insect Control in the FOOD INDUSTRY"

Name_____

Company_____

Address_____

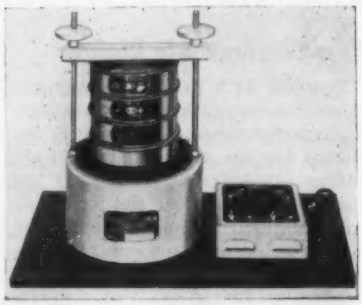
operation on varied production lines.

The machine, listed as Model TS-20 SS, is specially designed to tape-seal random size cases. Unit may be applied to seal merely top flaps, or both top and bottom flaps.

Each section of unit adjusts automatically to width and height of case fed in. In photo, first case (far right) is ready to enter sensing station. Second case has been "measured" and its inner and outer flaps have been closed. And third case (left), is being sealed.

New design eliminates need of having one case clear entire machine before a case of different size is handled.—*General Corrugated Machinery Co., Palisades Park, N. J.*

Circle 265 on Reader Service Card



Portable Vibrating Screens

This portable, lab-size, 8-in. circular screening unit is particularly suitable for research, production-control, and pilot-plant operations. Also available are 12 and 18-in. sizes.

Extremely quiet in action, the Type CDP, as it is designated, provides vertical-horizontal pulsating performance for fast, fine screening. Two independently driven rotating shafts set up the pulsations.

When employed with standard sieves and pans without spouts, unit gives quick analysis of measured batch samples. And when used with spouted sieves, it serves production-control purposes through analysis of larger samples by continuous operation.

Maker cites unit as handling granular, crystalline, powdery, or other dry materials, even through 200, 325, and 400 mesh. Also reported are good results with slurries, fluids, syrups, and the like.—*The C. O. Bartlett & Snow Co., 6200 Harvard Ave., Cleveland 5.*

Circle 266 on Reader Service Card

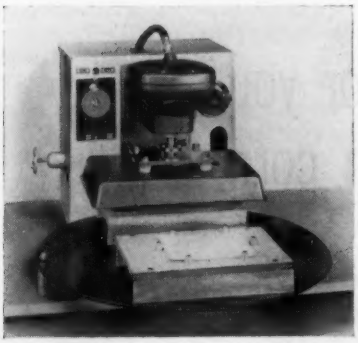
New Reefer Design Boosts Payload, Cold Retention

Superior insulation, greater cube, lighter weight, less maintenance, and negligible water absorption are advantages cited for this new type frameless refrigerated trailer.

Designed for highway and piggyback operation, the Perfection Reefer makes its insulation and skin do double duty as the body frame. Employed is a unitized sandwich of rigid insulation and fiber glass reinforced plastic skin in a seamless frame. This provides 2,184 cu. ft. of cargo space in a 40-ft. length. Wall, floor, and roof panels are color impregnated to cut maintenance.

In addition to meeting zero-cold requirements for frozen foods, the unit is also expected to cut shipping costs for comparatively light but bulky items as lettuce and eggs. —*Hupp Corp., Perfection Div., 1135 Ivanhoe Rd., Cleveland.*

Circle 247 on Reader Service Card



Handy 'Blister' Packager

There's new convenience in blister packaging of short run items and samples using this low-cost, manually operated, plastic sealer.

Called Clear-Pak Manual, Model 04CP, it turns out 6x8-in. units with 'bubble' heights up to 3 in. Further, it may readily be modified

Save up to ⅓ on the cost of your next conveyor...new handbook shows how

Tells how to cut planning and installation costs with pre-engineered, ready-built conveyor components for immediate or future handling needs

Install a conveyor system to meet your specific materials handling needs today . . . tomorrow . . . or in years to come. Using Standard's Handidrive handbook, simply order pre-engineered, prebuilt interchangeable conveyor components to which additions or alterations can be made as required.

"Do-it-yourself" buyer-users will find Handidrive assembly is fast, easy. The pre-engineered stock units include: roller conveyors (either gravity push-along or live roller type), inclined belt conveyors, drive units, intermediate sections, curved sections, supports, hangers and other miscellaneous items.

Lower initial cost — you buy only what you need — is only one of many Handidrive "off-the-shelf" benefits. The Handidrive handbook gives full details! Get your copy now . . . free of charge, of course.

3 plans to help you select and order simplified HANDIDRIVE pre-engineered units

"Do-It-Yourself" Plan — Determine your conveyor requirements, then select stock units from Handidrive handbook.

"Recommendations-Requested" Plan — On your request, a Standard specialist will advise you on installation of a custom-tailored Handidrive conveyor

"Leave-It-All-To-Standard" Plan — Standard's staff of experienced engineers will work out your handling problems of a more complex nature.

STANDARD
GRAVITY & POWER CONVEYORS
Sales and Service in Principal Cities
OVER 50 YEARS
of conveyor experience

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North St. Paul 9, Minn., Dept. D-8
Please send me a free copy of your new Handidrive handbook.
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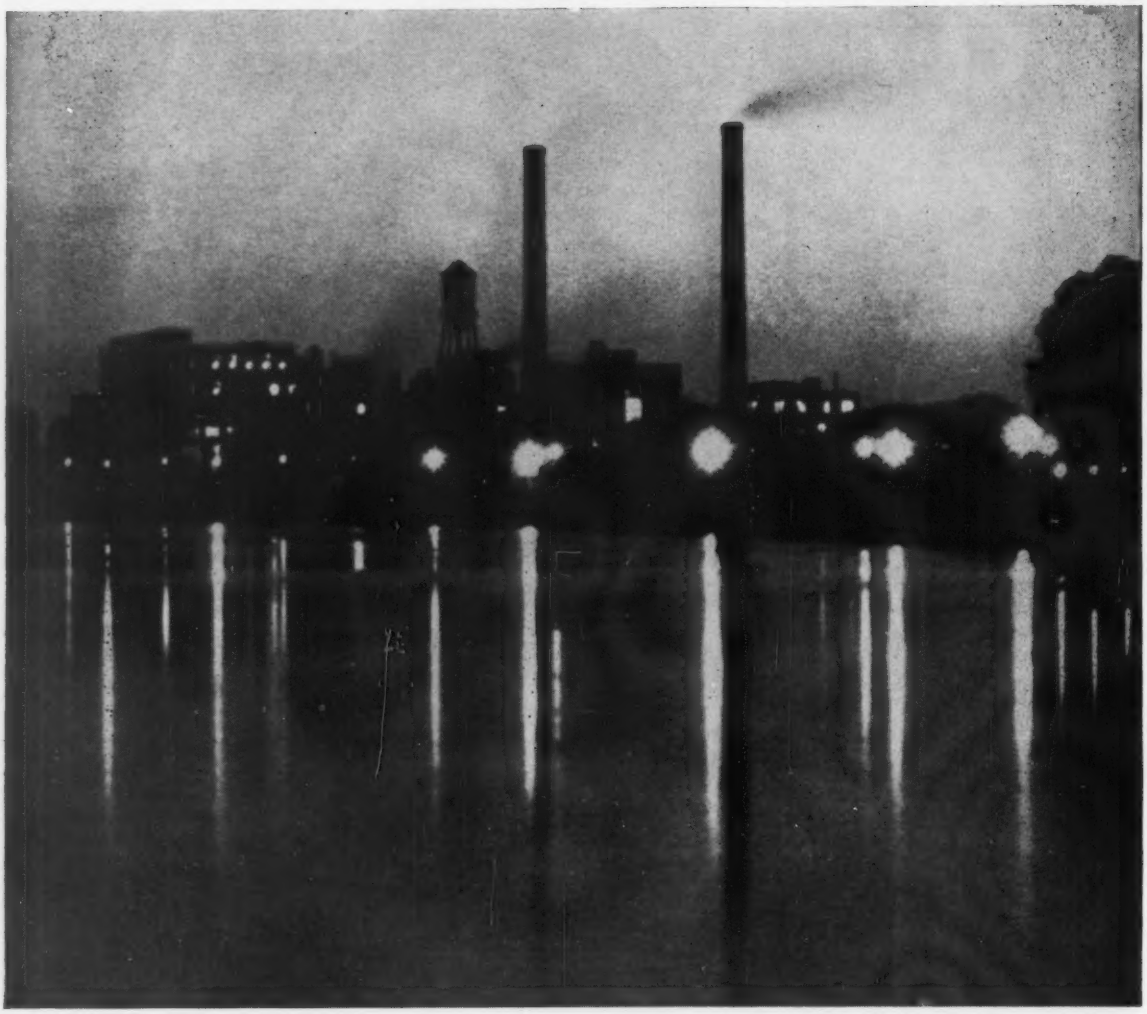
Company.....
Address.....
City.....Zone.....State.....



24 HOURS A DAY

A Better Processed Food for you with Clinton Products from corn

corn syrups • corn starches
Dextrose • Refined corn oil
Lactic Acid

See your Clinton salesman today.

CLINTON TECHNICAL SERVICE is freely available upon request.

CLINTON

CLINTON CORN PROCESSING COMPANY, CLINTON, IOWA

to seal products ranging to heights of 10 in.

Machine operates on 110v. current, plus a small amount of compressed air. Included is an air-pressure regulator. Bench space required is only 18-25 in.

In action, a complete package is made every 6 sec., using turntable routine (see photo) where one unit is sealed while next is being loaded. Simple dies enable rapid change-over between package sizes.—*Erdco Engineering Corp., Addison, Ill.*

Circle 268 on Reader Service Card

Environmental Test Room

Full 7-ft. "walk in" height is featured in new environmental test room, which is shipped knocked-down in panel form for quick assembly.

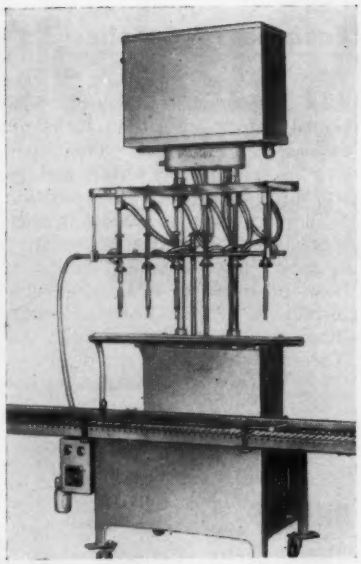
Unit is particularly suited for preservation and storage of samples, aging tests, specific gravity determinations, chromatography, conductivity tests, and numerous other applications.

Specific temperature may be set up in ranges from either ambient or 0°F. up to 140F., with accuracy within ±1F.

Construction is of heavy gage aluminum inside, with corrugated aluminum floor plates. Incorporated are fully enclosed heating elements, with plenum-chamber design, eliminating interior ducts and louvers. Viewing window is standard.

There are four model sizes.: 6 ft. by 6 ft., 8 ft., 10 ft., or 12 ft. Other sizes are available on special request. Shelving comes in a variety of styles and is fully adjustable. Fluorescent lighting and exhaust fans are included.—*Labline, Inc., 3070 W. Grand Ave., Chicago 22.*

Circle 269 on Reader Service Card



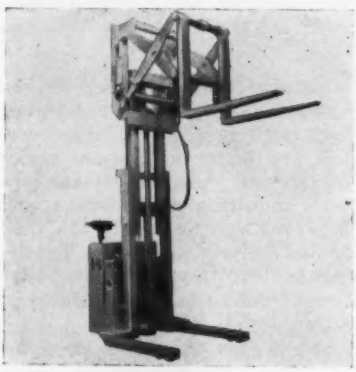
'Foamless' Liquid Filler

Liquid gravity filler, designated Model SFRT, is pneumatically operated with air valve control for foamless and dripless action.

Equipment is particularly designed for use by operators who fill 1 and 5-gal. containers with liquid products of the type tending to pose foam problems.

Available for either fully or semi-automatic operation, unit employs six special stainless steel nozzles that fill from the bottom up, thus curbing agitation. — *Packer Machinery Corp., 109 14th St., Brooklyn 15, N. Y.*

Circle 270 on Reader Service Card



High-Stacking Walkie Truck

This counterbalanced, high-stacking walkie truck versatilely handles loaded pallets of varying sizes and readily maneuvers in aisles only 6-ft. wide.

Called the ReachMaster, unit is available in capacities to 3,000 lb.

LA PORTE

FLEXIBLE STEEL CONVEYOR BELTS

The open-mesh construction of La Porte Belts traps food products, arresting movement in any direction. Thus, troughing is eliminated and the full width of these belts is utilized. Another good reason why La Porte Belts are widely used on sorting and grading tables, in scalders, washers, dryers, cookers as well as in freezers and dehydrators.

In addition, the open-mesh feature speeds up sterilizing and drainage, also permits the circulation of liquids and air around products in process. La Porte Belts are easily installed, shortened, lengthened, repaired—with a pair of pliers.

If you freeze, can, dehydrate, pickle, package, store or ship food, it will pay you to use La Porte belts. Available in ½" x 1", or 1" x 1" in any length and practically any width. Ask your mill supplier or mail coupon for illustrated literature and prices.

MAIL COUPON TODAY

LA PORTE MAT & MFG. CO.
Box 124
La Porte, Indiana

Please send free literature on your Conveyor Belt.

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ADDRESS_____

CITY_____ STATE_____

Atlas

ENGINEERED FLOORS END COSTLY MAINTENANCE

. . . provide lasting beauty!

Atlas Food Plant Floors combine lasting beauty and long service with a construction that permanently ends costly maintenance. Since these floors are completely corrosion-resistant thay are not attacked by any food acids or harsh cleaning agents. Patching is never required.

Individually engineered to your exact specifications, they are not affected by expansion, contraction nor thermal shock. In addition, Atlas floors retain their attractiveness even in the face of severe impact or continuous truck traffic.

Let Atlas show you how to permanently solve your food floor problems.

Write for your copy of Bulletin 3-2.

ATLAS MINERAL PRODUCTS COMPANY
MERTZTOWN, PENNSYLVANIA

Equipment & Supplies

In action, truck is simply positioned before load, then forks are extended into pallet. Thereupon, load is raised over wheels and retracted to secure traveling position.

To place load in a storage rack, truck is spotted before empty space in rack, then load is extended into rack and released, whereupon forks retract to truck. — *Lewis-Shepard Products, Inc., 125 Walnut St., Watertown 72, Mass.*

Circle 271 on Reader Service Card

BRIEFS

High-Capacity Clarifier permits direct transfer of milk from tanker to storage tanks, thus eliminates holding of unclarified milk. Unit (Model RN-9004) handles warm (135F.) or cold milk at 44,000 lb. per hr.—Centrico, Inc., Englewood, N. J.

Circle 272 on Reader Service Card

Automatic Liquid Filler, tradenamed Filamatic, now has improved indexing and bottle-positioning mechanism. Deft "fingers," actuated by cams, do work of former solenoid, reportedly minimizing maintenance. Further, new castering makes it simple to move machine and set up new filling line at a moment's notice.—National Instrument Co., Inc., 4119 Fordleigh Rd., Baltimore 15, Md.

Circle 273 on Reader Service Card

Stainless Steel Gyratory Screen (Model SS-2) is now redesigned with a stronger screen deck. Cited, too, are better sanitation, easier disassembly, use of lay-on type seals requiring no fasteners, and improved bearing lubrication. Unit is particularly applicable for accurate, sanitary sizing of dry foods.—Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

Circle 274 on Reader Service Card

Triple-Weighing Unit (for automatic packaging) offers 1/64-oz. accuracy. Scales have 5-lb. capacity, operate simultaneously, and are quickly adjusted. Available in steel and aluminum.—Mercury Heat Sealing Equipment Co., 2601 N. Howard St., Philadelphia.

Circle 275 on Reader Service Card

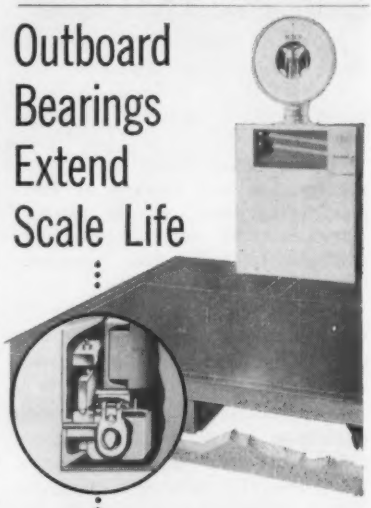
DIAMOND CALCIUM CARBONATE USP

Ask for quotations on this top-quality, low-priced, U.S.P. dense grade by one of the world's leading producers of calcium carbonates.

Shipped in 50-lb. bags from conveniently located warehouse stocks. Call or write today. Diamond Alkali Company, Union Commerce Building, Cleveland 14, Ohio. Sales offices in principal cities.

Diamond Chemicals
CIRCLE 3 ON READER SERVICE CARD

Outboard Bearings Extend Scale Life



Only DETECTO gives you OUTBOARD BEARINGS!

Write for information on full line of industrial weighing equipment from 1/100 oz. to 100 ton:

Detecto Scales, Inc., Dept. G-3
540 Park Ave., Brooklyn 5, N. Y.

CIRCLE 2 ON READER SERVICE CARD

Heavy-Duty Pallet of corrugated steel permits four-ways entry by fork trucks. Standard sizes in both single and double-face design, 48x40 in. and 48x48 in.—Palmer-Shile Co., 15981 Fullerton, Detroit.

Circle 276 on Reader Service Card

NEW SUPPLIES

New Colored Inks aid identification and segregation of cans during heat processing. Available in six colors, inks remain fluid in printer, yet dry fast and hard on tin.—California Ink Co., 545 Sansome St., San Francisco.

Circle 277 on Reader Service Card

Silicone-Ceramic Coatings protect metals at temperatures to 1,400F., also guard against corrosion. Supplied in any color as well as aluminum.—The Dampney Co., Hyde Park, Boston 36.

Circle 278 on Reader Service Card

Asphaltic Crack Sealer, for concrete and blacktop surfaces, is easily applied directly from special cone-shaped container. After setting, product neither runs nor becomes brittle at temperature extremes. Available in 5-, 30-, and 55-gal drums.—The Monroe Co., 10703 Quebec Ave., Cleveland.

Circle 279 on Reader Service Card

INGREDIENTS

Crystal Inhibitor speeds filtration of salad oils, increases yield and storage stability. Semi-fluid (Claricol), used at 0.02-0.1%, is added directly to any product.—Beacon Chemical Industries, Inc., 33-51 Richdale Ave., Cambridge.

Circle 280 on Reader Service Card

Wine Concentrate (non-alcoholic) is offered as lower-cost replacement for wine in variety of foods. Available in sherry, burgundy, and sauterne types, eight-fold concentrate cuts freight and container costs, is not subject to wine tax, and has special application in products that cannot tolerate high water and alcohol contents of standard wine.—Vie-Del Grape Products Co., 2808 E. Nebraska Ave., Fresno, Calif.

Circle 281 on Reader Service Card

For the

Cleanest, Most Effective Insect Control

Fog with

DYNA-FOG

TRADE-MARK

Insecticide Applicators

Check these important points which Dyna-Fog equipment gives with your present method of insect control:

- Only clean-up necessary is exterminated insects.
- Penetrates remote areas where insects hide and breed.
- All equipment is fully guaranteed for one year.
- Dyna-Fog has the only full line of fogging equipment—the leader in the field.

Curtis AUTOMOTIVE DEVICES, INC.

P.O. Box 297-12 Westfield, Indiana

CIRCLE 7 ON READER SERVICE CARD

NIAGARA "no frost"

NO RISK OF DAMAGE TO FOOD QUALITY

● Operating men, who know both costs and profits, will tell you that Niagara "No-Frost" gives you the best operation in frozen foods... both in freezing and in warehousing where trustworthy, safe storage temperatures must be combined with building layout that lets you *move* goods... not just store them. Only Niagara methods give you safe and even temperatures with over 20′ head room so that you can use your fork lift trucks and palletized warehousing efficiently. And "No-Frost" refrigeration shows the lowest upkeep costs in the business.

Write for Bulletin No. 105

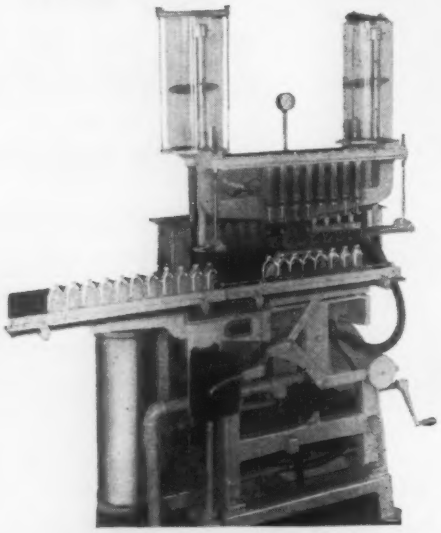
NIAGARA BLOWER COMPANY

Dept. FE-8, 405 Lexington Ave., New York 17, N. Y.

District Engineers in Principal Cities

PROBLEM

Limited production—several product types



ANSWER

Semi-automatic vacuum filling, SAMCO JR. style

This machine was "tailored to fit" the need for no-drip vacuum filling of smaller runs. Handles a variety of liquids and a wide range of container sizes... from one ounce to one gallon. Six filling heads... with room for more if desired. Very simple to adjust — only 5 to 10 minutes required for size changes.

It's the ideal in-between filling machine — time tested and proved beyond question in plants where flexibility is a "must" requirement. Write for complete information.

another **SEMI-AUTOMATIC** by **PNEUMATIC**

Pneumatic Scale Corp., Ltd.
91 Newport Avenue, Quincy 71, Mass. *Branches, Chicago and New York*
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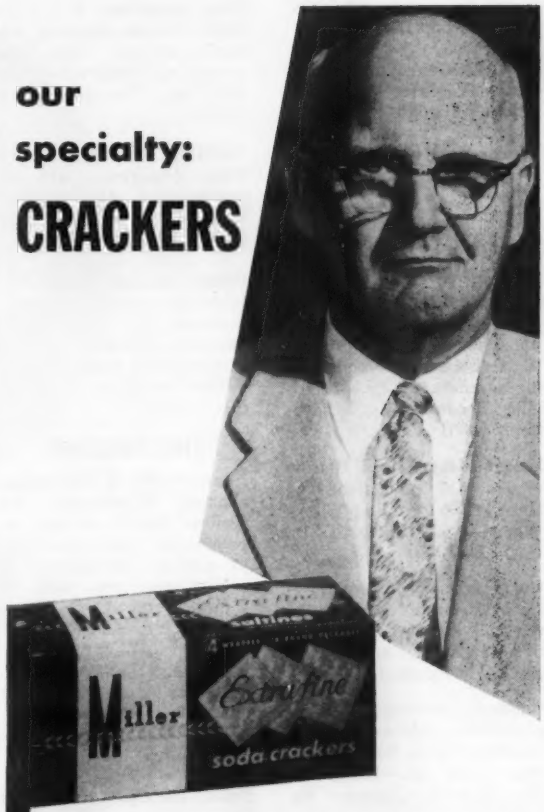

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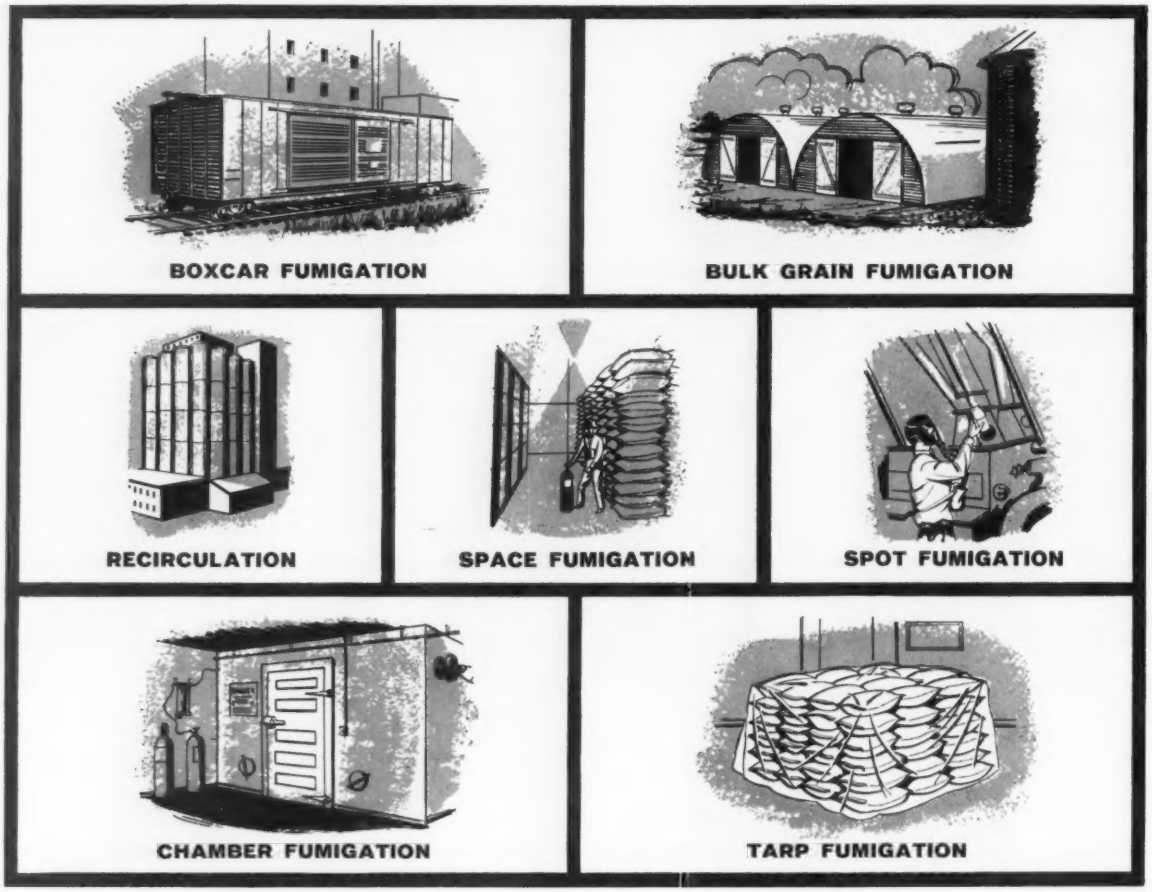

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THE POWERFUL CONSUMER *by George Katona. McGraw-Hill Book Co., 330 W. 42 St., N.Y.C. 36. 1960. 276p. Price: $6.50.*

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Industrial Dictionary

DICTIONARY OF NUTRITION AND FOOD TECHNOLOGY *by Arnold E. Bender. Academic Press Inc., 111 Fifth Ave., N.Y.C. 3. 1960. 144p. Price: $5.30.*

Here is a brief description of over 2,000 terms commonly met with in discussions on nutrition, food manufacture, and food handling.

Helpful to any food technologist, especially those who specialize in a particular area, dictionary covers such items as met in bacteriology, pharmacology, and technology. References to detailed works are included for many of the terms.

Candy Guide

CANDY MAKING—AS A SCIENCE AND AN ART *by Claude D. Barnett. Don Gussow Publications, 660 Madison Ave., N.Y.C. 21. 1960. 224p.*

Author covers in detail the four major operations of candy manufacturing: fabrication, processing, assembly, and finishing. However, chapters are also devoted to problems in cost accounting, sanitation, and packaging.

Included are flowcharts, equipment photographs, and formulas. Just some of the candy areas covered are creams, chewy candies, jellies and gums, marshmallows, chocolate coating, etc.

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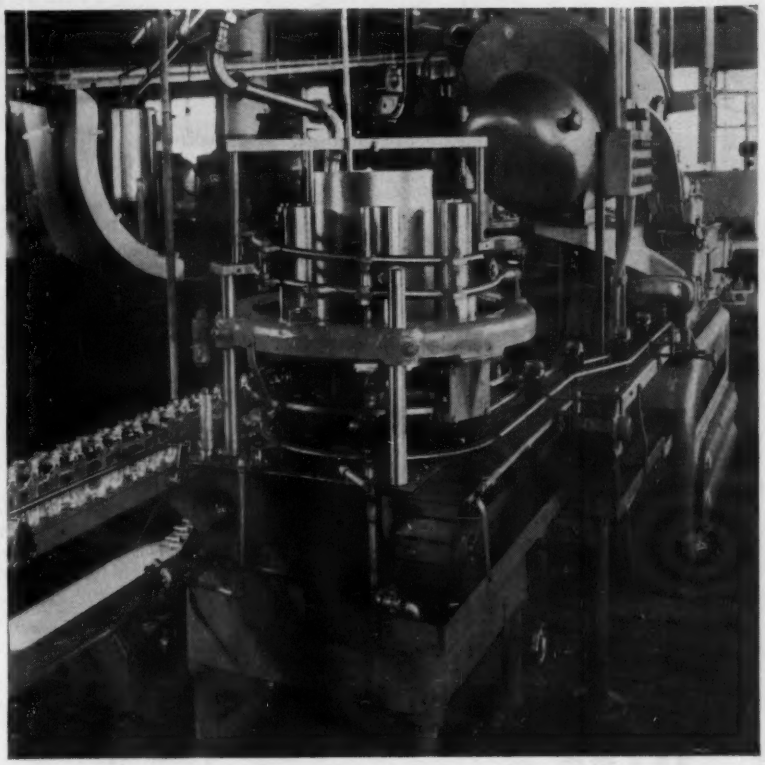

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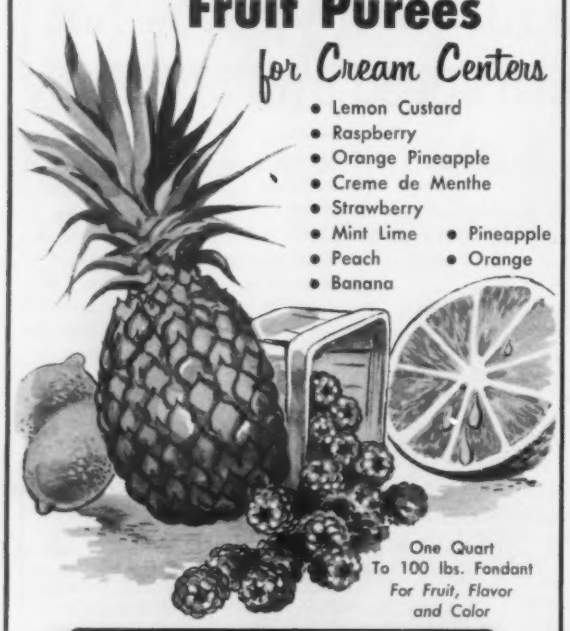

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Protein Base Composition for Preparation of Foamed Products.—Wm. J. L. Sutton, Monsanto Chemical Co., St. Louis. No. 2,929,715.

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Machine for Removing Heads From Dressed Poultry.—R. S. Zebarth, Gordon Johnson Co., Kansas City, Mo. No. 2,924,846.

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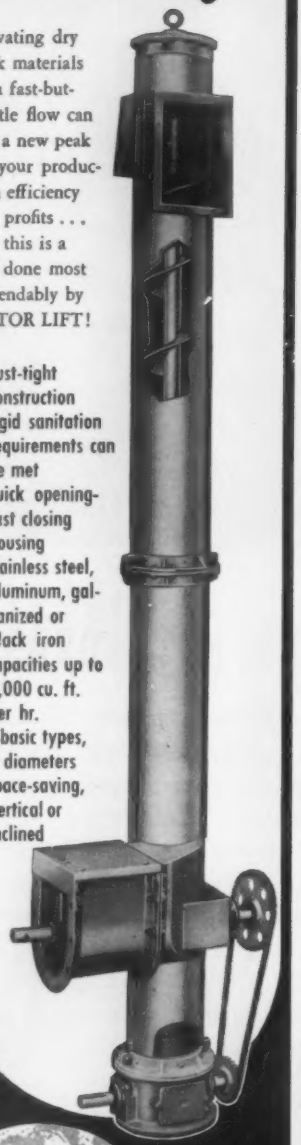

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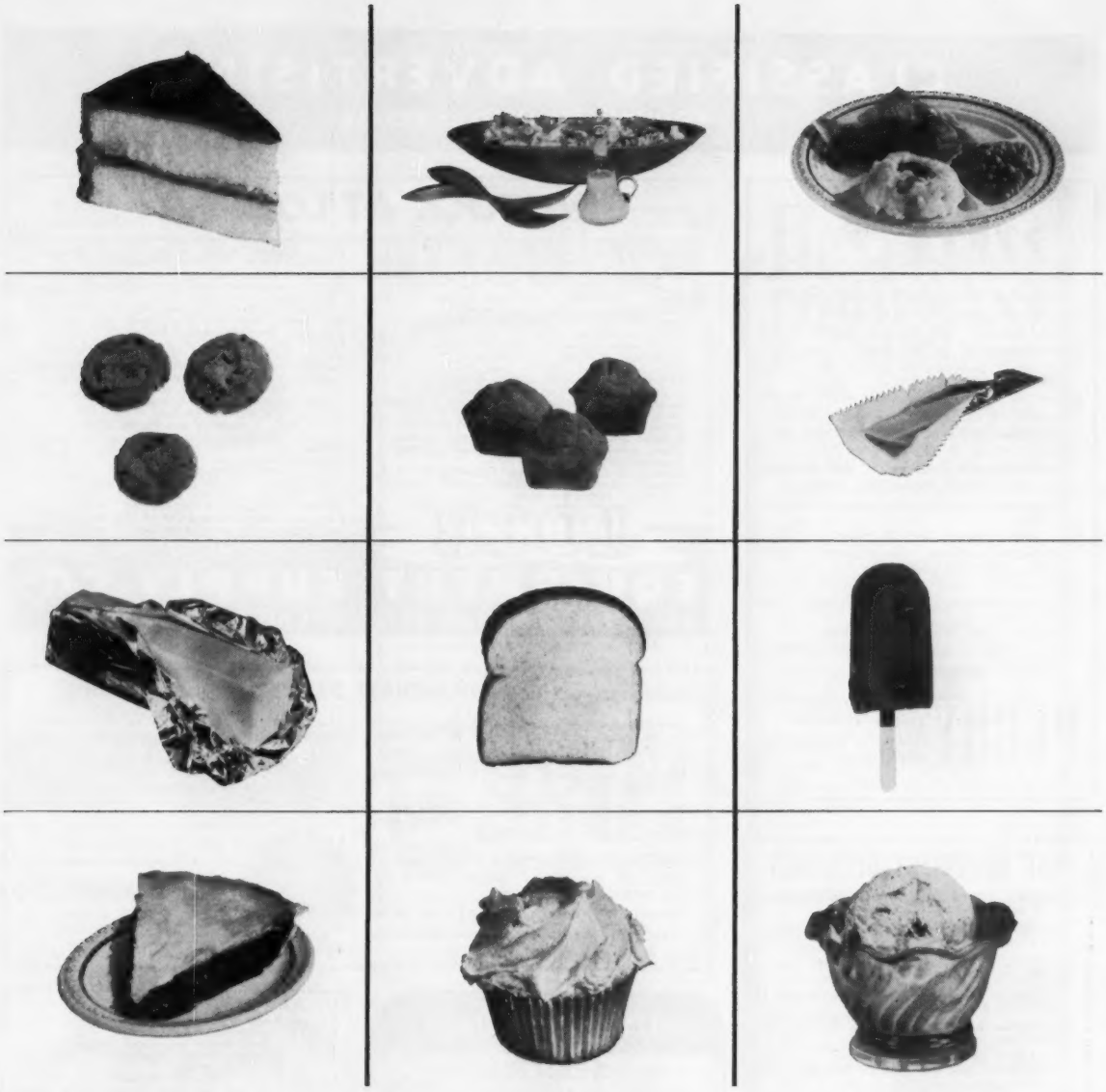

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Challenging opportunity for Product Development. Expanding national spice and seasoning firm desires graduate chemist 3-10 years experience. Salary commensurate with training and experience. Many benefits.
Company develops and manufactures ingredients for food processors. Send resume to:
W. C. HANSEN
ARCHIBALD & KENDALL, INC.
487 WASHINGTON STREET, NEW YORK 13, N. Y.

Wanted

WANTED
Used cooling tunnel with conveyor for fish sticks. Can be with independent refrigeration unit or ready to hook up to existing ammonia system.
BOX FE-15
c/o FOOD ENGINEERING, Chestnut & 56th, Phila. 39

EQUIPMENT WANTED
Continuous type Frialator and hot water blancher capable of producing 1000 to 2000 cbs. per hour. 8 S conveyor 15 to 20 ft. long, 3 or 4 tiers, to operate in freezer blast tunnel.
Sunny Products Freezing Service Inc.
415 Atwood Ave., Cranston, R.I. Phone WI 2-4700

Ingredients for The Food Processor

Carrot Oil Makes Food Golden Yellow
Like butter, carrot oil contains natural carotene—not synthetic. Used for vitaminizing food products where a yellow color is desired. No fishy odor or taste. Send for catalog and sample.
NUTRITIONAL RESEARCH ASSOCIATES
205 Broad St., So. Whitley, Indiana. Phone 100

FOOD Engineering Chestnut & 56th Sts., Philadelphia 39, Pa.

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No postage needed. A number is keyed to every news item in **New Equipment and Supplies, Just off the Press,** and **New Packages and Products.** Most advertisements also carry key numbers. Want to know more about the company or product? Just circle the right number here and mail the card.

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SPECIAL LISTING OF LITERATURE OFFERED BY OUR ADVERTISERS

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REPRINTS AVAILABLE

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The month in which the article originally was published is indicated, as is the cost per copy whether you buy one or a dozezn.

Address your order to Reprint Editor, FOOD ENGINEERING, Chestnut & 56th Streets, Philadelphia 39, Pa.

How to Build Facts into Profits, and Fast Start to Soaring Sixties, both by T. C. Taylor, March 1960, BOTH FREE.

Weighing Makes Big Strides by John V. Ziemba, March 1960, 75¢.

General Alphabetical Index, 1959 Editorial, 50¢.

Book Fans Additive Flames and Breeds Confusion by Dr. Charles G. King, April 1960, 25¢.

Booklet, four articles on additives, Know Your Additives Law! 50¢.

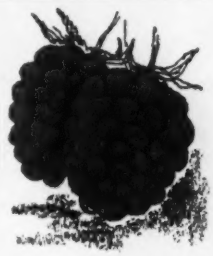
Putting the Sweet Smell of Success into Sales Promotions by Jerry Keefe, January 1960, FREE.

Sardine Canners' Program Hits Top-Quality Bull's-Eye by A. V. Gemmill, March 1960, 25¢.

Leaders Show How to Make Distribution $ Go Farther by T. C. Taylor, June 1959, 35¢.

Broad-Gage Supervisor Training Boosts Selling 5 Ways by T. C. Taylor, September 1958, 25¢.

Norda always assures you room for improvement



Flavor perspective–a Norda "must"–holds great promise for your products.

The way Norda keeps perfecting every flavor in its fold, you'll never find any close comparison–except Nature.

Come forward to flavors kept sharply in focus. Come, now, to Norda.

Flavor it with a Favorite–from Norda

Samples, free, by sending your business letterhead to
NORDA, 601 W. 26th Street, New York 1, New York · Chicago · Los Angeles · San Francisco · Toronto · Montreal · Havana
London · Paris · Grasse · Mexico City

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Table setting by Carole Stupell Studio

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Flavor is important only at consumer level . . . but here it's VITAL! The basic good taste of your product is what will sell the consumer and keep her sold.

Alva Flavors represent the ultimate in the art and science of modern flavor making.

Natural Flavors — processed from selected fruits by essence recovery distillation to retain all the light fugitive beauty of the fruit itself.

Imitation Flavors — man made flavors of the highest excellence based on sound research into natures flavor making methods.

Sealva Flavors — Tiny droplets of the finest quality flavors hermetically sealed in dry powdered form.

Custom Flavors — If yours is a special need, we will develop a special flavor for your exclusive use at no premium in price.

For basic good taste in your product, use ALVA Flavors.

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